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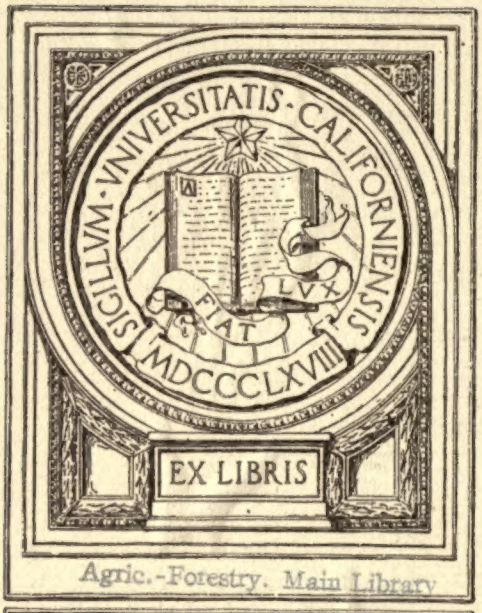

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FORESTRY PAMPHLETS

HISTORY

VOL. VI

The Tahoe. Vol. I, No. I. Tahoe National Forest, 1911.

The Tahoe. Vol. I, No. III, 1911.

The Tahoe and the El Dorado Exchange. Published jointly by Tahoe National Forest and El Dorado National Forest, December, 1911.

The Tahoe. Vol. I, No. V. April, 1912.

The Tahoe. Vol. II, No. I, July, 1912.

The Tahoe. Vol. II, No. II, November, 1912.

The Tahoe. Vol. II, No. III, April, 1913.

The Trinity Forester, Trinity National Forest, California. Vol. I, No. 5, October, 1911.

The Trinity Forester. Vol. II, No. I. March, 1912.

The Trinity Forester. Vol. II, No. 3, July, 1912.

The Trinity Forester. April, 1912.

The Sierra Ranger. Vol. V, Nos. II, III, IV.
Vol. VI, Nos. I, II and III.

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E D I T O R I A L S

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The "Tahoe" is a publication which will be issued at intervals throughout the year primarily for the information of the men in the field. It is designed for the purpose of bringing them into closer touch with what is going on outside of their immediate vicinity as well as to provide a medium for an exchange of ideas. The frequency of its appearance will depend entirely upon the interest shown.

In the first place this publication is not to be considered as a superficial organ. Its purpose lies far deeper than surface indications. If it does not touch responsive chords which will lead to a deeper interest in our duties, then its mission will be largely lost.

There is no better way in which the men on this Forest can demonstrate their appreciation of the work done in getting out this publication than by suggesting ideas whereby later issues may be improved. Suggestions for cover design, make-up and character of special articles are urgently desired. If there are any topics which you want discussed in special articles, efforts will be made to have discussions carried on by those best qualified on the Forest. News items referring to the work and the personnel in each district should be sent in by all Forest officers.

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The Tahoe Forest is named after Lake Tahoe which was first seen by white men on February 14, 1844, when Captain John C. Fremont crossed the Sierras just south of Freel's Peak. Fremont believed that this lake was one of the sources of the American River, and so placed it on his first map. In the early fifties its true position was discovered, and the name Lake Bigler given, after John Bigler, the Governnor of California. Later the name Tahoe was printed on the maps and the lake is now known by no other name.

Tahoe is an Indian name meaning "Big Water", "High Water" or"Fish Lake". The Indians of the Washoe tribe pronounced the word "Taou" which may be readily exaggerated to Tahoe, the general pronounciation of the word. These Indians also gave other meanings to the word, such as "Cold Water", "Water-Close-to-Snows", "Duck-Nest", "Water-Where-the-White-Fish-Live", "Lake-of-Big-Wind", in fact almost any name which strikes the fancy of the Indian questioned.

According to "A History of the Comstock Silver Lode and Mines" Lake Tahoe and the High Sierras" by W. H. Wright, the word Tahoe is popularly supposed to be a Washoe Indian word that means "Big Water". Drake, in his "California Mines", gives the meaning as "Big Water".

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The Tahoe Forest is crossed by two old emigrant roads, which were used by the early pioneers in the days of '49. The most famous of these roads is perhaps the one across Donner Pass, and which passes through Emigrant Gap. It was while attempting to come over the summit by this road that the Donner Party met its fate, Donner Lake near Truckee being named after this unfortunate party. A large wooden cross marks the site of the camp where so many members of this party perished.

Another road which has historic interest is the Henness Pass road, on a branch of which is Nigger Tent, a rendezvous of robbers and cut-throats in the early days. Prospectors and miners coming out from the mines with their stakes were robbed and murdered at this place. The Henness Pass Road and the Donner Road branch in Sardine Valley, the Henness Pass Road going through by Webber Lake, and the Donner Road through the present site of Truckee. On the latter road in the vicinity of You Bet is a large tree which goes by the name of "Fremont's Flagpole", as it is supposed to have been used by him for that purpose.

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The first settlement in Nevada County was made by a trader in 1849 at a place called Rose's Corral. In 1849 there came an influx of miners, and in this year a store was established on a point of land over-looking Bear River on the old Truckee Trail, the object being to trade with emigrants. For a time this was the only store between Bear River and Salt Lake, at which emigrants could obtain supplies. Here bacon was sold for $2 per pound and shoe tacks at 10¢ apiece.

In 1853 hydraulic mining was inaugurated near Nevada City, and gave a renewed interest to placer mining. The hydraulic was later employed by the Central Pacific to some extent in cutting through the deep hills near Dutch Flat at the time the railroad was constructed.

The first notice of the silver discovery near Virginia City in 1859 appeared in the Nevada City Journal of July 1 of that year. Large parties at once set out for that place, probably one-third of the male adults of Nevada County going to the mines. This discovery largely led to a railroad movement in that direction, and in 1860 a fesible route was discovered for a railroad on the divide between the Bear and American Rivers and construction started at once.

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The North Grove, the most northern grove of the Big Trees in existence, is found in the Tahoe Forest on the Forest Hill Divide near the Southern boundary of Placer County

on a tributary of the Middle Fork of the American River. There are six of these trees as well as several which have fallen. At the upper end of Gold Valley is what is known as Iron Ledge, which has been polished by glacial action. On this ledge appear hieroglyphics of all descriptions.

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We are in receipt of two excellent publications, the "Sierra Ranger" and the "Stanislaus Review". Both treat very fully of the work being done on the respective Forests, besides giving many items of interest and worth. Next to the Meetings of the Forest Supervisors we believe there is no better means of developing the spirit of unity between the Forests in this district than through the exchange of these publications.

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That the fire season has opened on the Sequoia Forest is evidenced by a news item in the edition of May 30 of the San Francisco papers. A fire which occurred on the Little Kern River burned over an area of 300 or 400 acres of timber land, and was subdued only after seventy-two hours hard work. The blaze was caused by a prospector who claims that it spread from his camp fire and that he could not get it under control because of his exhausted condition. He has been put under arrest and paroled pending the convening of the Federal Grand Jury.

Our fire season is at hand and it is up to every man on the force not to let the first blaze catch him napping. Protection is a more dominant issue this year than it has ever been, as evidenced by the preparations that have been made during the last few months.

C O N T R I B U T E D A R T I C L E S

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Seed-Eating Animals in Relation to Reforestration

By

Dr. Ned Dearborn.

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In the usual order of things, seed producers and seed consumers are, upon the whole, in harmony. While land is covered with living timber there is a vast amount of seed that cannot possibly develop into mature plants. Such trees as have seeds of any considerable size are thus natural purveyors for seed-eating creatures, both in fur and feathers. Many of these creatures have the habit of storing nuts and other seeds, for future consumption, which involves transportation, and it not infrequently happens that, through accident or oversight, seeds are left where they find suitable conditions in which to grow and reproduce their kind. Indeed, trees bearing seeds too heavy to be carried by the wind are distributed mainly through the provident labors of these animals. There is, therefore, normally a kind of interdependence between certain trees and certain animals.

The moment natural conditions are upset, however, this harmony gives place to antagonism. Let a fire reduce the forest to embers and bare earth, and the seed-eaters immediately become opposed to reforestration. Only the arboreal species are banished for more than a few months by a forest fire. The earth-dwellers -- ground squirrels, chipmunks, and mice -- soon return to their old haunts and flourish upon the products of various herbs and deeply rooted shrubs, which spring up and clothe the ground in a single summer. But though they thrive and multiply under the new conditions, their noses are ever keen for the scent of a nut.

When it is proposed to reforest a burn by seeding, an essential preliminary is to ascertain what kinds of rodents are upon it, how numerous they are and how they are distributed,

in order that adequate steps may be taken for the protection of the seed to be planted. The necessity for this preliminary is made clear by the light of experience.

On a plantation made in the Tahoe Forest during the winter following a fire in July, only 40 per cent of the seed spots produced seedlings. This loss was mainly due to Beechy ground squirrels and white-footed mice; yet careful observation and trapping showed the average number of ground squirrels per acre to be only two or three, and of mice to be about six. Had this burn been older, there would undoubtedly have been a larger population of rodents upon it.

On a 12 year old burn in the Black Hills Forest eleven mice and three chipmunks were trapped on a half acre containing 2000 seed spots. They had taken 70 of the pine seed planted there in six days. One chipmunk was seen to visit thirty-eight seed spots in four minutes. The need of attending to rodents prior to planting does not require further demonstration.

Where rodents are present signs of them can be discovered by scanning the ground, but the species to which they belong and their relative numbers can best be determined by the use of traps for a day or two. The catapult traps to be had at any hardware store serve every purpose, a dozen mouse traps and as many rat traps being sufficient. For bait, oatmeal or a scrap of bacon rind or, better still, both together, may be used. It is important to note whether the animals are concentrated in favorable situations or are generally distributed, as upon this point hangs the distribution of the poisoned grain which is to be employed in exterminating the pests. An excellent poison may be prepared as follows:

Wheat - - - - - - - - - - - - - - -	1 bushel;
Water - - - - - - - - - - - - - - -	1 quart;
Starch - - - - - - - - - - - - - - -	2 tablespoonfuls;
Saccharine - - - - - - - - - - - -	2 teaspoonfuls;
Strychnine (pulverized) - - - - -	2 ounces.

Add the starch, saccharine and strychnine to the water, heat to boiling, and stir constantly after the starch begins to thicken. When the starch is fully cooked stir it into the wheat, every kernel of which should be coated. A galvanized iron washtub is an excellent mixing vessel, especially as it is easily cleaned. Either the sulphate or the alkaloid of strychnia may be used.

If rain is imminent and the poisoning cannot be delayed, melted tallow should be substituted for the starch solution as a coating medium. In this case the wheat should first be slightly warmed, the saccharine and strychnine added, and then the tallow applied, in the ratio of a quart to a bushel of wheat.

The putting out of poisoned grain depends entirely upon the number and distribution of the animals for which it is intended. In that part of the Tahoe Forest near Nevada City, seed-eating rodents are not numerous, relatively speaking. The mice are living chiefly about logs and stumps and in old gopher holes, and the ground squirrels are easily located by their burrows. Under such circumstances as these, poison need be put only in places likely to be frequented by the pests. Wherever there is a general infestation, however, poison should be dropped every three or four feet along parallel lines five yards apart. For mice and chipmunks 20 kernels in a place are sufficient, but ground squirrels should have a teaspoonful. Poison put on grazing land should be slightly scattered to prevent its being taken by domestic animals.

In deciding on the proper time to lay poison for the protection of seed, there are several points to be considered. One of these, is the date at which planting is to begin. Another, is the habits of the animals aimed at. Mice are active at all seasons, but chipmunks and ground squirrels, in the Tahoe Forest, hibernate during the winter. Again, in winter, quail and grouse feed on buds and seeds, and are in danger of taking bait intended for troublesome mammals. In the warm season this danger disappears. The writer, at different times, has had under observation several hundred acres of land thoroughly treated with poisoned grain in May and June; yet he never knew of one grouse or quail living there to be killed by it.

When seeding is to be done in summer or in spring, after chipmunks and ground squirrels are abroad, poisoning should immediately precede it; but when it is to be done in winter, the land to be planted, together with a strip surrounding it, should be cleared of rodents before the fall rains set it.

In this connection, it may be well to call attention, parenthetically, to the advantage of using grain coated with strychnine, rather than impregnated with it. After a few rains, the grain loses its virulence, and is no longer a menace to the hungry.

In closing this article a word should be said relative to mountain quail. These birds appear to look upon a carefully prepared bit of ground as a proper place in which to scratch for a meal, and undoubtedly they pilfer winter-planted seed when they can find it. This loss can probably be avoided by coating the seed with an unpalatable substance, such as coal tar, which is used to prevent crows from pulling sprouting seed in eastern cornfields.

The process of applying the tar is simple. The seed is first covered with water heated to about 100 degrees Fhr., or as hot as can be borne by the hand without discomfort. Then the tar is added, in the ratio of a teaspoonful of tar to eight quarts of seed, and the whole is stirred until every kernel is coated. After draining off the water the seed should be allowed to dry a day or two before being planted.

There is ground for hoping that quail will reject tarred seed and cease to disturb it. In any event they need not be considered as a serious menace to reforestration. They lack the unerring sense of smell possessed by rodents, and it is only by diligence and good luck that they can blight the prospects of a seed spot.

Results of "Light Burning" Near Nevada City

by

M. B. Pratt

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It is a common practice for ranchers living in the vicinity of Nevada City to burn over their wood lands in the spring, generally in early April. They contend that the burning does not damage the timber to any extent and affords protection against fires in dry season. The land burned over is stocked with second growth yellow pine of very rapid growth, with here and there a large tree of the original virgin stand.

On the afternoon of April 4, 1911, a rancher living about two miles from Nevada City on the Rock Creek road, was burning brush along the creek in front of his house. There was a brisk wind blowing and the fire spread and ran in the dry needles of the wooded slope bordering the creek. According to the rancher's statement, it would have been a very easy matter to put out the fire, but as long as it was started, he thought he might as well let it run and burn off the litter and underbrush. With the assistance of the man helping him burn brush he spread the fire along the lower edge of the slope. The wind carried it at a rapid rate through the ground cover and letter which was dryer than usual at this time of the year on account of the unusual warm weather of the preceding two weeks.

The fire burned up the slope to the top, where it burned fiercely in manzanita brush and a thick clump of yellow pine.

Since there was some wood cut a short distance beyond, the rancher and his man stopped the fire at night-fall when it had died down considerably, by scraping away the needles from a narrow trail along the upper part of the slope. He stated that it probably would have gone out of its own accord.

This burn came to my attention as I was passing along the road on account of the number of burned young trees. The condition of the stand seemed to denote that the fire was accidental rather than by design since it hardly seemed possible that the owner would deliberately let fire burn up so much young growth. Upon being questioned however, this gentleman stated that he considered conditions after the fire very satisfactory and that the young timber killed did not amount to much as it was too thick anyway. His contention was that the timber left will now grow better and that he will have more in the long run than before the fire. He stated that the area had not been burned over for twenty years at least.

To show the results of this so-called beneficient light-burning, a sample 1/4 acre plot was taken in a clump of young trees averaging 50 feet in height and forty years of age which fairly represents conditions on the 15 acres burned over.

Results of burning on 1/4 acre of yellow pine:

(a) The ground litter of pine needles was partially consumed.
(b) There was no chaparral on the ground.
(c) Effect on tree reproduction by age classes:

		Alive	Dead
Class I	-- 1 - 5 years	---	---
" II	-- 5 - 10 "	1	23
" III	-- 10- 20 "	28	46
" IV	-- 20- 40 "	59	24
" V	-- over 40 "	---	---

This count on this plot shows that all of the growth up to 10 yrs. of age, three-fifths of the growth 10 - 20 yrs. of age, and two-sevenths of the growth from 20 - 40 yrs. of age was killed. Seedlings younger than five years of age were absent on this plot owing to the density of the stand. Observations on other parts of the burned area, however, showed that all of this age class had been killed.

The average diameter of the class from 20 - 40 years of age was about 10 inches. Many of the poles killed in Class III were over-topped and would eventually have died out.

The fire burned the hardest where there was manzanita brush. In one place a yellow pine tree 40 inches in diameter and 115 feet high which was surrounded by this brush was killed. The flames had run up the bark which was pitchy to the very top of the tree.

The stand of poles and old trees before the burning averaged about 8,000 bd. feet per acre. Practically one -third of this amount was killed as well as the majority of the young growth up to 20 yrs. of age. A few sugar pines 30 - 40 feet in height were killed, the trees burning like torches.

If the young growth had not been killed, it would have developed into a merchantable pole and cordwood stand in about 20 yrs. Cordwood is being cut from timber 10 - 12 inches in diameter on an adjoining tract. After the second crop had been removed it would have taken fifty years for the third crop to develop since the nucleus for for that crop was badly lacking. The second crop would yield about 10 cds. or 5,000 bd. ft. to the acre in 20 years, and the third crop that amount after fifty years.

This burn has affected the second crop of timber by destroying trees that would have been ready for the axe in a few years after the largest trees had been cut out. The third crop is about totally ruined and it will take at least five years to get any kind of a beginning of the fourth crop.

The burning has not furnished the older trees a protection against fire since the brush will soon sprout again and come in denser than ever as a result of the fire. The dead needles resulting from this fire will fall and the foundation laid for a hotter fire than ever.

Last year a piece of light burning near this tract came to my attention: It was an ideal fire from the light-burner's stand point, burning slowly along in the pine needles and tar-weed. Of course it burned up the tender seedlings since the tar-weed makes a hot, pitchy fire, but it did very little damage to the clumps of young growth from ten to twelve feet high or the older trees. This spring I looked over this piece and found it covered with a thick layer of pine needles. The tar weed was all coming back and the conditions for fires were just as dangerous, if not worse than last year. This piece will doubtless be burned over again and again and the conditions reached such as is found in the vicinity of Camptonville where there are stands of large yellow pine trees under which there is very little reproduction on account of the dense carpet of tar-weed which has developed as a result of repeated burnings.

This light burning was done in the vicinity of the Rock Creek fire last summer which burned about 250 acres of second growth timber and brush land. The land it burned over had been repeatedly light-burned but the results attained interposed no barrier to the progress of the crown fire of last summer.

S I L V I C U L T U R E

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Planting has been carried on nearly all winter on the Tahoe. Starting in October at Coreys Station, activities were transferred in a short time to Rock Creek. Later in the season the party was divided, and one part went to Freeman's Crossing where a large area was put in. In all 319.7 acres have been planted, as follows:

Coreys Station - - - - - - - - - - - -	30.0	acres
Rock Creek - - - - - - - - - - - - - -	219.5	"
Freeman's Crossing - - - - - - - - - -	61.7	"
Experimental Plots - - - - - - - - - -	8.5	"
	319.7	"

On this area 230 pounds of Yellow Pine; 60 pounds Jeffrey Pine; 234 pounds Sugar Pine; 27 pounds Douglas Fir, and 1 1/4 pounds Sequoia seed were planted at an average cost of $4.85 per acre including the cost of seed. The cheapest area was near Freeman's Crossing costing $2.75 per acre while one area near Rock Creek was a close second with $2.85 per acre.

All the areas have been more or less successful This is especially the case near Rock Creek where fully half the spots show young seedlings and more are to be expected next spring after the seeds get a second wetting. The area at Freeman's Crossing being much dryer has not succeeded as well though in some places there are large numbers of seedlings. As many as 15 seedlings in a spot have been counted showing what can be done where rodents do not get the seed. The area at Coreys Station has not been examined but it is feared that it is not very successful as the mice and chipmunks were very abundant there.

Next winter we hope to put in a small crop near Rock Creek. Hand corn planters will be tried as well as seeding in alternate rows of different species. It is also hoped that a number of seedlings can be obtained from the Chetto Nursery for experimental work here. We expect to have much greater success here as we will then know how to successfully get rid of the rodents.

As the Tahoe is on the whole very well timbered either with first or second growth, no large amount of planting will be done here, though large burns and some of the brush areas will be seeded up in time.

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During the winter and spring months two reconnaissance parties have been employed in the new additions in the western part of the Forest. During this time approximately 48,000 acres within the National Forest have been covered, besides the running of 85 miles of National Forest Boundary Lines.

Work started in the Quaker Hill country under the direction of Lumberman Elliott. The party was then moved to Freeman's Crossing and Camptonville where it covered a large area lying between these two places. At a later date a second party under Forest Assistant Gallaher started in the vicinity of Rock Creek and covered the area lying between that place and North Bloomfield.

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During the early summer reconnaissance is to be carried on in the vicinity of Lake Tahoe, and at a later date the work will be transferred to the country south and east of Sierraville where there is greater fire danger. It is expected that the presence of the party will prove a highly effective fire fighting unit. A large and heavily timbered area will be covered by the crew which is to consist of a Forest Assistant, four Field (Student) Assistants, and a Cook. It is hoped that the Truckee Block will be nearly completed by the end of the summer.

The men already assigned to this work are:-

Jesse Campbell	Blue Tent, California
Max W. Gardner	Lansing, Michigan
Stanley L. Wolfe	State College, Pennsylvania
Clarence F. Korstian	Lincoln, Nebraska
Ralph W. Hayes	Ames, Iowa

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The Forester has recommended to the Secretary of Agriculture that the maximum amount of timber which may be cut on the Tahoe Forest during the next fiscal year be fixed at 32,000,000 ft. B. M. or 1% of the rangers' estimate of 3 1/2 billion feet submitted some time ago. It is now believed, however, from the results obtained by reconnaissance and on account of the recent additions, that this amount is far short of the timber on this Forest.

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The Sugar Pine seed crop on this Forest will be large this year although the prospects for other species does not seem to be as favorable. Sugar Pine trees on the Goldstein and Rossend Condon sale areas are loaded with cones and there should be no trouble in getting our share of the 2,000 pounds of this species required from the District, from these two sales alone

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Forest Assistant Gallaher has taken a number of sample plots in connection with a second growth yellowpine study he is making. As soon as conditions will permit, a study of comparative returns between cutting on private and government land will be begun on the Banner Tract cut over by the Sierra Nevada Wood & Lumber Co. V. C. Noddin will assist in taking silvical data throughout the season as well as on reconnaissance work in the Truckee District.

O P E R A T I O N

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The contract for the erection of a lookout tower on Banner Mountain has been let to G. W. Jones, the work to be completed by June 30. The tower will be 47 feet in height which will be sufficient to permit of an unobstructed view over the tree tops in all directions.

The man who will be stationed there permanently during the fire season will be provided with maps, field glasses and have direct connection with the office at Nevada City by telephone. A topographical map will be so oriented on the tower that the localities in which smoke is detected can be readily identified. It is expected that the establishment of this protective measure will result in the speedy suppression of all fires sighted.

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A special authorization has been received from the District Office with which to purchase tools and supplies to provide for fire protective measures. It is planned to have tool boxes at objective places throughout the Forest, especially in the vicinity of dangerous slashings as well as an abundant supply of tools at ranger headquarters. Now is the time for the District Rangers to study their fire plans and maps, and mature their plans for the protection of their districts the coming fire season.

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All outstanding bills should be forwarded to this office at once, any bills incurred between now and June 30 should be forwarded as soon after July 1 as possible, not later than July 10. If it is not possible to forward all bills at that time a statement of such accounts should be forwarded in order that we may reserve sufficient funds to meet these liabilities.

When sending requisitions to headquarters, Forest Officers would save the office force much time and trouble if they would state the quantity desired, as well as giving the name of the form in addition to its number.

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By a proclamation signed by President Taft April 28, 1911, the Bloomfield Administrative Site, embracing 59.33 acres was added to the Tahoe Forest.

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The S.P.R.R. and the Forest Service have entered into an agreement whereby the railroad company agrees to reserve rights of way for roads, trails and telephone lines used by the Forest Service, in the sale of all lands. In order that this information may be had by the railroad company, it is desired that Forest officers prepare a tracing on Form 220 for each patented Railroad section crossed by road, trail or telephone line, which the Forest Service may construct in the future. Field notes should also be submitted in duplicate showing the courses and distances for the rights of way and ties made to section corners at points of entry and departure whenever possible.

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The matter in the "Special Uses" and "Grazing" Manuals recently sent to Forest Officers, supersede all previous instructions and should be carefully studied.

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The results of the ranger examination last fall were very gratifying as far as the standing of men taking the test on this Forest is concerned. Of the twenty-three who took the examination, sixteen were successful. John P. McMillan who was guard on this Forest last year heads the list with an average of 89.85. E.P.Gleason and J.H.Norwege who are now Assistant Rangers on this Forest also received high averages.

G R A Z I N G

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It has been found that the district rangers have been too burdened with work to give the proper attention to range matters, especially when there have been controversies where considerable time is necessary, to effect a satisfactory solution of the difficulty. In order to relieve the rangers from a portion of this work and that they may devote more time to protection J. S. Sivertson has been made Grazing Ranger. He will study the grazing situation on this Forest in cooperation with the District Rangers whose recommendations will be required in every case before final action is taken. He will also have charge of the collection of forage plants which it is desired to make as complete as possible.

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Grazing maps have been prepared for all ranges within the Forest and a copy sent to the District Ranger concerned, as well as to the permittee. This is the second season thisscheme has been tried. We find that by referring to a range by a local name and furnishing stockmen with blue prints of their ranges better results are being obtained. It is realized, however, that there is considerable room for improvement and the District Rangers are requested to pay special attention to securing as much data as possible this field season in order that the boundaries and maps may be made more permanent.

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Grazing permits issued for the year cover a total of 40,650 sheep and goats, 6,072 cattle and horses and 94 hogs on government land, and 58,340 sheep and goats and 3,369 cattle and horses on private land. The number of stock admitted to the Forest land falls somewhat short of the allowance for the year granted by the Secretary of Agriculture, which was for 57,300 head of sheep and goats, 7,700 head of cattle and horses and 200 head of swine.

H E A D Q U A R T E R S N E W S

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Some splendid papers have been submitted in connection with the rangers' reading course. One of the big surprises was the good work done by nearly every person examined on Sudworth's Trees of the Pacific Coast. The study has been largely discontinued at present on account of the press of other work, but it is hoped that every one starting the course will see it through the coming winter.

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Two Supervisor's sales have been made so far this season, one to Rosson and Condon, Washington, for 975,000 ft. B. M., and the other to E. L. Goldstein Co., at Brandy City, amounting to 500,000 ft. B. M. Applications have been made by the Smith Mill near Truckee and H. O. Nichols of Sierraville for timber adjacent to their operations.

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A trespass case has been recently worked up by Lumberman Elliott and Forest Assistant Gallaher against the Marsh Lumber Co., the value of the timber cut being estimated at $1,575. Other cases recently settled are trespasses amounting to $738 by King & Wolford Co., and $184 by C. Russell of Iowa Hill.

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In the early part of May, Deputy Supervisor Pratt made a trip to Brandy City in connection with the sale to the E. L. Goldstein Co. He returned by way of Goodyear's Bar, where he went over the files of the district ranger preparatory to their transfer to Assistant Ranger King.

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Dr. Nod Dearborn, of the Biological Survey, is at present engaged studying the best methods of combating rodents on planting areas. His article in this issue makes very interesting and instructive reading since it treats of a matter which the average forest officer knows very little about at this stage of the game.

- - -

Supervisor Bigelow returned May 30 from a three weeks detail at the District Office.

- - -

Forest Assistant J. Alfred Mitchell, who has been on this Forest nearly two years, was assigned to the District Office on May 8 where he will act as a specialist on investigative work. He will inspect silvical work on the Forests in this District and assist Supervisors in the actual starting of work assigned.

- - -

Frank Haynie, who has been clerk on this Forest almost from its beginning, was transferred on May 8 to a like position on the Angeles Forest, exchanging places with C. O. La Rue, who arrived at Nevada City on May 16.

- - -

Miss Viola Jones of Grass Valley has received a temporary appointment as stenographer in the office until July 1.

- - -

Forest Clerk La Rue has gotten up a revised filing scheme for rangers which should be of great assistance in keeping the files straight. It is identical with that in the Supervisor's office except that in some cases where the correspondence is small, one folder is used instead of the two or more that would be used in the headquarters office.

M. B. Elliott, former Supervisor of this Forest resigned his position of Assistant District Forester in the office of Grazing on April 1, and is now living at Lakeport, his old home.

- - -

Louis Margolin of the District Office, with whom many of the men on this Forest are acquainted, has accepted a position with a private forestry concern in British Columbia.

- - -

Deputy Supervisor Pratt and Forest Assistant Gallaher made a trip in the early part of June to the Rosson & Condon mill near Gaston to mark the timber for the season's cut. There is still considerable snow in this region and it is not expected that the mill will start before July.

- - -

Special attention is called to the revised procedure in respect to the occupancy of claims not consistent with their development.

- - -

A road five miles in length is being built to the Arctic Mine above Washington. This road when completed will be of material assistance to Forest officers in protecting the region which it opens up.

- - -

An application has been recently filed in the District Office by George Worn of Reno for a permit for head works and canal for the development of water power for commercial use at points along the Little Truckee River.

On June 6, Lumberman Elliott and Forest Assistant Gallaher left for Truckee to take up timber sale work in that region in which lumbering activities are just beginning. An estimate will be made of a tract of 160 acres near the Smith mill and preliminary marking done. After that work will be done in the vicinity of Hobart Mills and Sierraville until Mr. Elliott's departure from this Forest which will be about June 15.

- - -

Expert Miner Hurd arrived from the Plumas Forest on June 8 to examine mining claims on the Forest for which application for patent has been made and on which unfavorable reports have been made by local Forest officers.

- - -

The hope has been entertained right along that it might be possible to have a company of regulars from the Presidio stationed on the Forest this coming fire season. This hope was strengthened through the passage of a resolution by the State Legislature asking that the troops be used in protecting the National Forests in the state. Secretary of War Stimson decided, however, when approached on the matter by Congressman Raker that the use of the troops for this purpose would not be advisable under the Act of Congress. The Secretary furthermore stated that it would set a bad precedent since it would justify the use of troops in other forms of public service requiring an organized and disciplined force. The San Francisco Call, in discussing Secretary's stand, stated that the California delegation would endeavor to have him reconsider the matter.

- - -

Supervisor Bigelow and Ranger Sivertson left for Camptonville and vicinity on June 8. The Supervisor returned to the office on June 11 preparatory to a trip to Truckee. Ranger Sivertson continued to the Challenge District to take up grazing matters.

- - -

The following item was clipped from the Nevada City Transcript of June 12 :

"M.B.Pratt, deputy supervisor of the Tahoe National Forest, is the proud father of a bouncing baby girl, which was born yesterday. Today he has been wearing a broad smile and is the happiest father in the land. The baby has been named Mary Louise Pratt."

C U R R E N T I N F O R M A T I O N

- - -

In one of our exchanges it is stated that a 10,000,000 ft. timber sale has been approved on the Plumas FOrest. Supervisor Kelley states that he has a prospective sale this season on the Eldorado with the Caldora Box & Lumber Company. We are also informed that negotiations are under way for a sale of several hundred million feet on the Stanislaus to the Standard Lumber Co.

- - -

An experiment is being conducted in the Blue Mountains of Washington by the Forest Service for the purpose of definitely determining the influence of forest growth in conserving the water supply.

The original stand of timber on a watershed upon whose run-off farmers and horticulturists in the valley are dependent, will be replaced by planting. It is claimed that since the primitive stand was removed, springs have dried up and the flow of water steadily decreased. Thousands of trees will now be planted on the denuded slopes at the earnest solicitation of the people living in that vicinity in an effort to restore the water supply to its former state.

- - -

A new book entitled "Principles of Handling Woodlands" by Henry S. Graves has just been received at the office. It explains in a very thorough and scientific manner the various silvicultural systems. The method of application, the advantages and disadvantages, and the conditions under which each system can be applied are fully discussed, and typical western stands in which it can be applied are given. The last two chapters are devoted to a discussion of the protection of the Forest from the destructive agencies such as fire, insects and funguous diseases. The book is a more complete and advanced treatment of the subject than the Primer of Forestry and will be read with interest, especially by those who have studied the Rangers' Correspondence Course.

NEWS FROM DISTRICTS

- - -

CHALLENGE DISTRICT:

E. P. Gleason, lately principal of the Downieville schools, assumed charge of this District on May 16 with headquarters at Challenge. This is a new district, having previously been a part of the Camptonville District.

DOWNIEVILLE DISTRICT:

W. S. Barton who has been in charge for two years, is now on leave of absence with the intention of entering some line of business, the nature of which he has not yet determined. G. E. King who was stationed at Hall's Ranch last season has been made District Ranger.

The Brandy City unit which formerly was included in the Camptonville district is now a part of the Downieville district. C. W. King will be stationed at Hall's Ranch to assist the district ranger on patrol duty, scaling and improvement work.

The St. Charles trail, five miles in length, is nearly completed. It will afford the District Ranger quick and easy access to the upper end of his district. The Serpentine House has been painted and presents a very neat appearance.

SIERRA CITY DISTRICT:

The heavy snow this winter did considerable damage to improvements in the vicinity of the Wild Plum Station. The Dutch Sawmill Bridge was broken down but many of the timbers were salvaged by Ranger Walton before being swept away by the water. About 600 feet of flume used for irrigating the station pasture was broken down. The crushing force of the snow is reported to have been worse than in many years.

SIERRAVILLE DISTRICT:

At last it has been demonstrated that brush bruning in the spring can be successfully done on this Forest. Rangers Babbitt and Joy burned the brush on the California Lumber Co., sale about the middle of April finding conditions ideal for burning at that time. A report received from Ranger Babbitt gave us some pointers on this much discussed question which will be of value in the Brush Disposal Study which is being made this season on this Forest.

Between the heavy snow this winter and the strong winds this spring, the Sierraville Station has been having a hard time of it. It has been necessary to strengthen the braces to the barn as a protection against the winds sweeping across Sierra Valley.

Mr. Maurice S. Macy who passed the Ranger examination last fall, entered on duty on June 1 at Sierraville where he will be under the direction of the district ranger.

TRUCKEE DISTRICT:

The Forest Service launch "Ranger" was stored for the winter in a substantial boat house but on account of the unusual amount of snow which fell at Lake Tahoe the past winter, the boat house was wrecked and considerable damage was done to the "Ranger". The everlasting hoodoo seems to still be following this poor boat, since she has been a regular Jonah so far as expenses for repairs are concerned. We hope for better luck the coming season. G. M. Noyes will go to the Lake on June 15 to get everything ready for the season's patrol, which will begin in July.

Ranger Woodburn has been experimenting with spring brush burning on the Iceland Lumber Company's sale, but on account of high winds and dangerous slashings the risk has been too great to continue burning with any degree of safety.

R. C. Woodburn will be in charge of the Truckee District this season, since J. S. Sivertson, who was formerly in charge, has been temporarily assigned on grazing work.

The heavy snowfall caused considerable damage to fences and telephone lines throughout the District and Ranger Woodburn will be kept hustling making repairs before the fire season sets in.

The Lake Tahoe Railway and Transportation Co., has refused to allow Forest officers free transportation on its railroad this season, since they claim in doing so, they would be violating the Interstate Commerce law passed during the last Legislature. It is hoped that this matter can be straightened out, since free transportation on this road is of considerable convenience, especially in case of fire.

Guards Ehngren and Smith, who were employed in cooperation with the Floriston Pulp & Paper Co., last season, have been appointed Asst. Rangers on the Trinity and Lassen Forests respectively. Charles W. Bonta and Archie S. Campbell have been appointed to take their places and will enter on duty June 16.

The Tahoe Tavern at Lake Tahoe opened for the Summer season on May 15.

F. J. Dooley who has scaled the past several seasons, was appointed as Assistant Ranger on June 1. He will remain in the Truckee District until the California Lumber Co., begin operations.

EMIGRANT GAP DISTRICT:

Wm. D. Campbell of Foresthill, who passed the ranger examination last fall, reported to J. A. McIntosh, district ranger, at Emigrant Gap on June 1. Considerable trail work will be done in this district before the beginning of the fire season in order to provide for more ready acces to danger spots.

NORTH BLOOMFIELD DISTRICT:

The improvements at the Bloomfield Ranger Station which was recently withdrawn by special proclamation, have been purchased for $1,000. The improvements consist of a five room house, barn, 1 3/4 miles of fence, woodshed, outhouse, chicken house, enclosed well and 400 feet of woven wire fence. The acquisition of this station is a big step towards the better administration of this district.

W. H. Helbig, whose name appears on the eligible list, will be stationed at Graniteville on June 16. He comes from the District Office where he has been employed as Property Clerk.

NEVADA CITY DISTRICT:

A. R. Ivey has been placed in charge of this district which formerly was included in the North Bloomfield district. He will be located at Quaker Hill where he has fenced a pasture for his stock.

Considerable fire-killed timber has been sold this spring. The cordwood has been sold at 10¢ per cord, the poles at 1/2¢ a linear foot. A number of Nevada City residents are cutting fire-killed timber under free use permits.

FOREST HILL DISTRICT:

C. W. Sutcliffe who was located in this district last season, was appointed on May 1 as assistant to F. A. Wilson, district ranger. His station is at Michigan Bluff. Considerable boundary has been run this spring as well as much repair work done.

A report was recently received on the power plant and transmission line of the Foresthill Electric Company on the Middle Fork of the American River. Since public land within the Forest is being used, steps are being taken towards putting the company under special-use.

Oran Jones of Foresthill proposes to start up the Finning Mill which has been idle several years, and has applied for a sawmill permit and a small amount of timber. If the demand warrants, a large amount will be purchased.

George W. Campbell has been appointed as Assistant Forest Ranger for the fire season on this district.

CAMPTONVILLE DISTRICT:

District Ranger Whittum has recently purchased a house in Camptonville which gives him plenty of office room. He now has excellent telephone communication with adjoining districts and the Nevada City Office.

G. F. Peekema left for Freeman's Crossing on June 13 to take measurements at the guaging stations in that vicinity which were established as a result of a cooperative agreement between the Forest Service and the U. S. Geological Survey.

J. H. Horwege who was appointed May 1, will be stationed at Miller's Ranch near Mountain House for the summer. A telephone instrument and connections have recently been sent him with which to connect with the main line near the house.

Ranger Whittum and Assistant Ranger Horwege have brushed out and repaired the Celestial Valley Trail which lessens the distance between Camptonville and Freeman's Crossing by several miles.

Martin B. Turner of Oak Valley assumed duty on June 16 as fire guard. His route of patrol will embrace a new lookout point at Oak Flat will be connected with Camptonville by telephone.

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
TAHOE NATIONAL FOREST

The coming of spring has evidently aroused the poetical instinct in certain loyal Forest Service breasts as evidenced by the rhymes and near rhymes given below. The first spasm originated on the Shasta, the attack grew more acute on the Tahoe and culminated on the Angeles. Further outbreaks are anticipated in other parts of the District.

- - -

The Spasm From the Shasta

The men of Shasta at Ash Creek abound,
Doing reconnaissance on snow-shoes all the day round.
Two men to the section no matter how far,
And they complete one each day, for thats their motto at par.
Sometimes the shoing is not of the best,
And they come in at night longing for rest.
Hardships we have plenty and short trips are few,
But we hired out for tough men, so I guess we'll pull through.
It's surprising how simple the corners are found,
By us MEN of the Shasta, the ones of renown.
And the way we can guess the diameters per tree,
And the number of logs that there will be,
Is wonderful to those who come out and see
"THE MEN OF THE SHASTA".

The work it is pleasant, if the hills not too steep,
As one is liable to slip, and fall on his seat.
Shoeing up some hills at times it is slow,
But when you come down, why the way you will go.
Good cooking and dainties have been strangers to us,
But when we get to town, we'll eat till we bust.
On amateur batches of food we've exist,
And our stomachs right now, could digest pine pitch.
But beyond these few trifles, we've proved with delight,
That reconnaissance on snow-shoes is practical all right.
As many from the other Forests, were against our great pla
But their ignorance is pardonable, as they didn't understand,
What a tough little bunch our Supervisor had on hand,
"THE MEN OF THE SHASTA".

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
TAHOE NATIONAL FOREST

A Quiver from the Tahoe

- - -

The depth of snow on Shasta's hills
In Shasta's men great fear instils;
When out they go to count the trees,
They take with them their twelve foot skiis,
Or lacking skill with these to tread,
They get the humble webs instead.
Treading hard, a square a day,
They scale the trees upon their way,
And out through all the District wide
They scatter broad their smiles of pride,
Say they've done what ne'er'd been planned
On any Forest in this wide land.
They pace a mile within a rod,
And find all corners, Yes by - - -!!!
With D. B. H. and logs per tree,
They get the volume one, two, three.
Faint and worn, with hunger scant
Up those hills they have to pant;
Their grub's no good -- they'd gladly dine
On such poor fare as bad pitch pine,
"Those Men of Shasta".

But further south they manage to do
Without the aid of skii or shoe;
With cowhide boot our Tahoe treads
O'er snow that Shasta fears and dreads;
Cold feet at night are not the kind,
On other forests you often find.
We count the seedlings, we caliper brush,
Correct the Geology in all the slush,
We see each sapling covered with snow,
And carefully figure how fast it will grow.
We examine the soil, and number the stock
That will feed and fatten on each tract of rock.
Our cooking's the best, you'll understand,
For each of our boys is a dextrous hand
At all the things, from H--l to Heaven
Found in our Bible, Page 27 - - -
"THE MEN OF TAHOE".

And so my friend, you'll plainly see,
That all things aint what they seem to be --
And first or last you'll find it true,
That under the sun there's nothing new.

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FOREST SERVICE
TAHOE NATIONAL FOREST

A Musing from the Angeles

The growth of chaparral on Angeles hills,
A loss of religion in our men instils.
When off he goes -- unfortunate gink;
With never a drop (of water) to drink.
For what cares he for hill or glade!
John Jones' homestead must be surveyed.
No matter if that homestead lies,
Deeply buried from human eyes
On trackless waste of desert dim,
Or stands on end, a hillside grim.
His back grows stiff, his knees grow lame,
But the Angeles Ranger sure is game;
And he sings to himself as he grubs along
The words of that old familiar song:
"Every day'll be Sunday, by and by.
THAT MAN ON THE ANGELES

And the early dawn of the coming day
Will find him up and far away,
With mattocks, picks and dinner pail;
A "Cholo" crew; an impassable trail
And dynamite, two hundred pound
With which to move this 'dobe ground;
And a mercy'tis, six times in seven
That he isn't blown to -- well, to Heaven.
Or surrounded by crates of eucalypts
His strength expended in digging pits;
For the Angeles Forest needs more trees
To sway in the Heavenly southern breeze.
So he wields his mattock 'gainst earth and stone,
Whistling meanwhile in an undertone:
"Every little movement has a meaning all its own"
That weary man on the Angeles.

But at night he sits in his cabin door
And watches the kidlets play on the floor.
For the Angeles Ranger's too wise a man
To live on the Shasta-Tahoe plan;
And long ago he annexed for life
An excellent cook as his wedded wife.
He scents the coming of good things to eat
Through the open door of the kitchen neat.
And he lifts his eyes to skyline dim
Where snow-capped peaks seem to frown at him;
And he thinks with joy as he goes to dine:
"No snow-shoes or skiis for me and mine,"
With any other man under Heaven's dome
I wouldn't change places; there's no place like home
IF THAT HOME BE ON THE ANGELES.

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
TAHOE NATIONAL FOREST

D I R E C T O R Y

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Headquarters.

Richard L. P. Bigelow	Forest Supervisor	Nevada City
Merritt B. Pratt	Dep. For. Supr.	Nevada City
William H. Gallaher	Forest Assistant	Nevada City
John S. Sivertson	Forest Ranger	Nevada City
V. C. Noddin	Asst. For. Ranger	Nevada City
Charles O. La Rue	Forest Clerk	Nevada City
Viola G. Jones	Stenographer	Nevada City

Reconnaissance Party In Field

Max W. Gardiner	Field Assistant	Sierraville
Clarence F. Korstian	" "	Sierraville
Stanley L. Wolfe	" "	Sierraville
Ralph W. Hayes	" "	Sierraville

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Challenge District:

Elmer P. Gleason	Disttrict Ranger	Challenge

Downieville District:

George E. King	District Ranger	Goodyear's Bar
Charles W. King	Asst. For. Rgr.	" "

Sierra City:District:

Aaron H. Walton	District Ranger	Sierra City

Sierraville District:

Woodford H. Babbitt	District Ranger	Sierraville
Evan A. Joy	Asst. For. Rgr.	Sierraville
Maurice S. Macy	Asst. For. Rgr.	Sierraville
Fred J. Dooley	Asst. For. Rgr.	Loyalton

Truckee District:

Robert C. Woodburn	District Ranger	Truckee
Howard Dudson	Asst. For. Rgr.	Truckee
George M. Noyes	Asst. For. Rgr.	Tahoe City
Charles W. Bonta	Coop. For. Guard	Tahoe City
Archie S. Campbell	Coop. For. Guard	Floriston

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
TAHOE NATIONAL FOREST

Foresthill District:

Frank A. Wilson	District Ranger	Foresthill
Charles W. Sutcliffe	Asst. For. Rgr.	Michigan Bluff
George W. Campbell	Asst. For. Rgr.	Foresthill

Emigrant Gap District:

John A. McIntosh	District Ranger	Emigrant Gap
W. D. Campbell	Asst. For. Rgr	Emigrant Gap

North Bloomfield District:

William A. Merrill	District Ranger	North Bloomfield
William H. Holbig	Asst. For. Rgr.	Graniteville

Nevada City District:

Albert R. Ivey	District Ranger	Nevada City

Camptonville District:

Charles D. Whitham	District Ranger	Camptonville
Jordan H. Norwege	Asst. For. Rgr.	Camptonville
Martin B. Turner	Forest Guard	Camptonville

T H E T A H O E

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D I R E C T O R Y

Headquarters

Richard L.P. Bigelow	Forest Supervisor	Nevada City
Merritt B. Pratt	Deputy Supervisor	Nevada City
William H. Gallaher	Forest Assistant	Nevada City
Violet L. LaRue	Stenographer	Nevada City
Charles O. LaRue	Clerk	Nevada City
Knower Mills	Forest Assistant	Nevada City
John S. Sivertson	Forest Ranger	Nevada City
Vivian C. Noddin	Assistant Ranger	Nevada City

Districts

Challenge District:		
Elmer P. Gleason	District Ranger	Challenge
Downieville District:		
George E. King	District Ranger	Goodyears Bar
Camptonville District:		
Charles E. Whittum	District Ranger	Camptonville
Jordan H. Horwege	Assistant Ranger	Camptonville
Sierra City District:		
Aaron H. Walton	District Ranger	Sierra City
Sierraville District:		
Woodford H. Babbitt	District Ranger	Sierraville
Evan A. Joy	Assistant Ranger	Sierraville
Maurice S. Macy	Assistant Ranger	Sierraville
Fred J. Dooley	Assistant Ranger	Loyalton
Truckee District:		
Robert C. Woodburn	District Ranger	Truckee
Howard Dodson	Assistant Ranger	Truckee

Emigrant Gap:		
John A. McIntosh	District Ranger	Emigrant Gap
William D. Campbell	Assistant Ranger	Emigrant Gap
Bloomfield District:		
William E. Merrill	District Ranger	Bloomfield
William H. Helbig	Assistant Ranger	Graniteville
Nevada City District:		
Albert R. Ivey	District Ranger	Nevada City
Foresthill District:		
Frank A. Wilson	District Ranger	Foresthill
Charles Sutcliffe	Assistant Ranger	Michigan Bluff
George W. Campbell	Assistant Ranger	Iowa Hill

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I N T R O D U C T I O N

The following comprises the contents of the October issue of "The Tahoe". We invite special attention and study to the contributed articles appearing herein and would be glad to receive further comments on any of the subjects discussed. All of the articles, with one exception, have been written by comparatively new men in the Service, and we want to say right here that their interest is highly appreciated and we hope to receive more contributions from them in the future. Their work along this line shows they have devoted time and earnest study to the work in hand and are cultivating their powers of observation as well as their imaginations. We are now considerably encouraged to feel that "The Tahoe" is filling the place for which it was intended. We trust that in the end it will be the means of broadening and making more efficient every man on the Forest, through the creative effort it may inspire as well as through the direct contact which its pages bring with fellow-workers.

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E D I T O R I A L S

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S c i e n t i f i c M a n a g e m e n t

There has been much written and spoken about the conservation of natural resources, but very little attention has been paid to the efforts lost by men in awkward, inefficient and ill-directed movements. "Scientific Management" which is now being widely practiced in the business world seeks to remedy this waste by teaching men how to direct their efforts so as to secure the best results. Its workings have been heard of chiefly in dealings between capital and labor. The results obtained, however, have been so uniformly successful that thinking men everywhere are giving the principles involved wide attention and practice.

The idea is for each man to reach a state of maximum efficiency, so that he may be able to do the highest grade of work for which his natural abilities fit him. The attainment of this end means the reaching of a point where the work in which he is engaged, the community in which he lives and the country at large receives the benefit of the best that is in him. The principles which are essential to this end are given by Mr. F. W. Taylor, an authority on scientific management, as follows.

1 - Science, not rule-of-thumb
2 - Harmony, not discord
3 - Cooperation, not individualism
4 - Maximum output, in place of restricted output.
5 - The development of each man to his greatest efficiency and prosperity.

It does not take much effort for us to apply these rules to our every-day work in the Forest Service with good effect. A few suggestions designed to promote further thought along these lines are here submitted for the consideration of every officer on the Tahoe Forest.

1. It is a common failing for men to get into ruts by doing their work by rule-of-thumb. We often see men who fashion their acts by methods which may have been up-to-date five years ago but which have long since outlived their usefulness. This is a time of great changes and for men to be wide awake and observant.

Scientific management tells us to live scientifically not by rule-of-thumb. Webster defines science as knowledge gained and verified by exact observation and correct thinking. This being the case, the Forest Officer who follows the advice given in the following editorial from the "Sierra Ranger" is not far off the track:

"The Value of Observation"

"Probably nothing has any larger influence on the effectiveness of a man's work in Forestry than his ability to observe intelligently the things that are going on about him as he travels to and from his work. It is too often the case that one long accustomed to the woods rides through them so engrossed with thoughts of work or play, that he misses a lot that would, if observed, help materially in increasing his efficiency in his profession. Should not a new sign board be placed at the forks of the trail? Is not that a remarkable growth for a sugar pine seedling to make in a year? Do not these numerous seedlings coming up under the larger trees prove well enough that there haven't been any ground fires in this locality for some years? Isn't that a good argument then to use when talking to a light burning theorist? What killed that yellow pine? Have I this species of forage plant in my collection? This method of marking on this old cut-over area has left the ground too greatly exposed. What change is necessary to better this condition in the future?

Most men can observe well when they remember to. It is just because they have gotten out of the habit, that they fail at times to notice things that would help if seen. This is written with the hope that it may assist some to remember not only to watch for the interesting and valuable things but to record the results of the observations so that others besides themselves may benefit thereby. Do not let others observe for you. Get to it first, and you will be just that far ahead of the man who occasionally forgets to watch out."

The writer on a recent trip over the Forest had his attention called by a Ranger to branches low down on the trees on areas where light burning had been practiced. He had worked out for himself by observation a good argument against light burning by noting that the open forest, which is the result of light burning, had trees with branches nearly to the ground. This affects the quality of the lumber which can be obtained, by reducing the amount of clear length, and constitutes an effective argument in his mind against light burning. This man was immediately sized up as not living by rule-of-thumb, but as progressing along the lines of scientific management, although he perhaps had never heard of that term.

2. The second essential principle is working in harmony. This does not mean that we must agree with everybody or knuckle down when we believe we are right, just to keep peace. Every man has a right to his own opinion, and is respected for it when he states it in a gentlemanly manner. The Forest Officer, however, who is a brawler, or is intolerant of other people's views honestly expressed, or who is censorious of his fellow officers in and out of season, is not only impairing his own efficiency, but hampering that of the whole force as well.

3. Cooperation, not individualism, is what gets the quickest and best results. The Supervisor can do very little without the full cooperation of his men. All of us can do more towards improving ourselves and our chosen work by lending our shoulders to the wheel a little more and not standing on one side with ideas of how much better we could do the work if we did it alone.

The value of cooperation was amply demonstrated on this Forest this fire season when every lookout man, patrolman and ranger cooperated with the office in dealing with the fire problems. This is the kind of cooperation we want in all lines of Forest activity.

4. A man has the greatest respect for himself who does all that he is capable of doing the best he can every day. Very often the tendency is to put off work until tomorrow which could be done today. We never know in the Forest Service what the morrow will bring forth. Many times there are matters which could easily be attended to at the time they come up with the expenditure of very little surplus energy which are indefinitely delayed by circumstances that could not be foreseen. In business terms, we are often guilty of a restricted output, which results in waste of time and effort to everyone concerned. The consciousness that we are doing the best we can should be sufficient reward for the effort expended.

5. The development of the greatest efficiency should be the aim of all of us, whether in the office or in the field. We are in the midst of a great movement, which is the conservation of not only material things, but of the efforts of mankind in general. As desciples of conservation, does it not behoove us to make the most of what we have, with the assurance that new avenues for the added efficiency we acquire through the exercise of our efforts every day, will be gradually opened up.

Each of us possesses a certain given amount of energy. Our minds and bodies are the plants in which we use this energy, from which we manufacture our character and achievements. It requires a good engineer to run this plant in order to bring out its greatest efficiency. Let every man be his own efficiency engineer in such a way as to reduce waste of effort to a minimum and increase effectiveness to a maximum.

Mr. Taylor amply sums up the whole matter in his book "The Principles of Scientific Management", in the following paragraph:

"The time is fast going by for the great personal or individual achievement of any one man standing alone and without the help of those around him. And the time is coming when all great things will be done by that type of cooperation in which each man performs the function for which he is best suited, each man preserves his own individuality and is supreme in his particular function, and each man at the same time loses none of his originality and proper personal initiative, and yet is controlled by and must work harmoniously with many other men."

Forest Officers Active Game Wardens

Attention is called to a common sense article in this issue dealing with the above subject. Supervisor Bigelow was a ranger and game warden on the Sierra Forest at about the time as the officers mentioned by Mr. Noddin, and substantiates his statements in every particular. All the District Rangers as well as two assistant rangers have recently received appointments as Deputy Fish & Game Commissioners. The former passive attitude should now be superseded by an active interest and the old ex-officio gag relegated to the past, with other issues long since dead. From now on Forest officers on this Forest will give the State game laws equal weight with their other duties.

Banner Mountain Tower

On the cover of this issue of "The Tahoe" is shown a picture of the lookout tower constructed in June of this year on the top of Banner Mountain, four miles southeast of Nevada City, Banner Mountain is 3900 feet high and the tower is 47 feet high with a base 24 feet square and a platform on top 12' square. Its top is far above the trees and the topography of the surrounding country is such that there is afforded an unobstructed view for a radius of more than 50 miles, embracing parts of ten counties in Central California, and more than 1/3 of the Tahoe Forest.

Forest Guard Howe has been stationed on the tower during the past fire season and his knowledge of the country and careful vigilance has enabled us to demonstrate its efficacy in our fire protection work. Many a nights rest has been disturbed by this vigilant watchman sighting the gray filmy lines of smoke floating upward beyond some distant ridge.

A large map of the country was prepared at the beginning of the fire season by mounting topographic sheets of the U.S.G.S. on linen and inscribing thereon a compass dial. This map was properly oriented and immediately on discovering a fire it was only necessary to take a bearing on its point of origin by placing a rule on the map and sighting along its edge. In taking these bearings an ordinary rule divided into inches and fractional inches was used, so that it was not only possible to ascertain the direction and approximate location of the fire, but also to estimate its distance in an air line. Mr. Howe sighted 15 fires in July, 27 in August and 21 in September making a total of 63 fires sighted during the season.

Lookout towers of this nature have been constructed in other parts of the country and have proven quite an asset in fire protection. So far as is known, however, this is the first one constructed in California, and it has already proven such a success that others may be constructed on this Forest in the future. The money spent for the construction of this tower is one of the best investments ever made by the Forest Service and its cost has been several times repaid, in the first year of its existence, by the amount of timber saved by prompt information being given of all fires sighted.

Much has already been written and said about this tower, and as stated in the August issue, it beats any amount of firewarnings in impressing upon the mind of the public the earnestness with which we are going at the question of fire protection.

The Chambers of Commerce of both Nevada City and Grass Valley are taking an active part in making Banner Mountain one of the most popular points of interest in this section of the country. The organization of a "Banner Club" is now contemplated in both cities, having for its aim the construction of a sconic automobile boulevard to the top of the mountain. A subscription list is also in circulation to secure funds to place a large telescope on the tower. We earnestly hope that both movements will be a success. The more people we can attract to the tower, the greater will be the interest in the work we are doing to protect our Forests.

No one can go on the tower and view the surrounding country without taking an interest in it and it has been noticed this summer that nearly every visitor has carefully scanned the country in search of a fire. This is a big step towards securing cooperation of the people with the Forest Service. They leave the tower with an indelible impression of our endeavors and in the future whenever they see a Forest fire it will at once occur to them to notify us, since they realize that we are here to extinguish that fire and protect the interests of the whole people. The interest that has been manifested this summer is demonstrated by the number of people registering in the book kept on the tower for that purpose. This register shows 386 visitors in July, 238 in August and 235 in September, a total of 859 for the season. Registrations were made from Philadelphia, Seattle, Rochester, Albany, Goldfield, Washington D. C., Ogden, Palo Alto, Sacramento, San Francisco and San Jose. Since the close of the fire season there have been 145 additional names registered making a total of 1004 visitors to date.

C O N T R I B U T E D A R T I C L E S

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An Exciting Scene on Lake Tahoe

By

Captain George M. Noyes of the Launch "Ranger"

To veterans on the Forest, an account of a forest fire will not possess many elements of novelty. However, an account of one with a nautical setting by a novice may be of interest to some. At six o'clock in the evening of September 1st as your humble servant was about to sit down to a meal of fried trout after a day of patrolling, the telephone brought the news from Brockway of a fire at Crystal Bay. In the face of such news an appetite usually robust, fled precipitately. The feeling for eating gone, it only remained to buckle on my armor, give my associate "Ranger" a good drink of gasoline and get under way.

The wind which had been blowing pretty strong for several days seemed to have moderated somewhat, but as we drew away from the west shore the waves commenced to roll heavily, and the "Ranger" needed constant guidance. It was with considerable difficulty that the side lights and search-lights were kept lighted. That feat was not accomplished until darkness settled down and numerous exasperating deviations from the true course had been indulged in by the "Ranger", which now began to jump and roll about in the steadily rising sea, in a manner anything but reassuring to even a weather beaten mariner. In the gleam of the search-light the billows of ebony blackness seemed like the backs of living, writhing monsters. flecked with masses of shining foam. My craft would wallow and labor as it mounted the roaring crests, then with a sudden burst of speed and a whir of the engine descend the waves like a trip down the Chutes.

At last Brockway appeared as a speck of light in the general blackness, and as it drew nearer, brought to the mind new elements of danger.

It was only by a subconscious feeling as to the location of the wharf with reference to the possible source of the light, and the sound of the waves on the shore as to the distance from dangerous rocks that an approximation was made

as to the landing place. Guided by the excited voices of a crowd of people gathered there, and with the valuable assistance of the searchlight a safe landing was finally made.

Here I was informed that the fire was on the other side of the State line point about three miles away. My informant, a large fat man, with bare pate that shone in the glimmering light appeared unusually anxious to wield an axe on the fire line. Several others who crowded into the boat, when asked if they were going to fight fire, did not respond with such alacrity but finally said they were, obviously in preference to being left behind.

The voyage around the point though tempestuous was uneventful. As we rounded the point the fire burst upon us with savage splendor. Reaching from the lake shore far up the steep hill the writhing, leaping tongues of vivid flame greedily licked up the branches, and curling and twisting, sent showers of sparks high into the air. In the inky water the reflection flashed and shimmered. To one with no experience or stomach for strenuous labor it seems an impossibility to cope with such gigantic forces. But anchoring the launch we disembarked armed with axes and shovels, and commenced the difficult ascent over rocks and brush.

My amateur fire fighters were very chary about getting near the fire and when the flames with a crackling noise ran up the branches of tall trees they betook themselves with much haste to a distance to watch the display of pyrotechnics. They would not remain stationed in separate places but kept herded together at my heels whether the tasks allotted were completed or not. By keeping at them, however, and with the efficient help of one or two employees of the Brockway Hotel one side of the fire was hemmed in with a pretty fair fire line by 12 o'clock. At that time a general exodus for the Brockway Hotel commenced. By a small show of authority just enough men were held to combat the fire until morning, and a promise of reinforcements for that time was obtained. After a trip to Brockway for refreshments the fight was continued until morning with the result that the fire was completely surrounded by a narrow cleared line.

Here the strategic move was made that nearly lost the battle. Depending on promised reinforcements from the land side and leaving an attachment on guard, the naval forces withdrew to the base of supplies. Like Blucher at Waterloo the land forces failed to arrive on time. The guard wholly

inefficient, and at 9 o'clock after an hours fitful slumber, the commanding officer was awakened with the news that the fire had broken out again. A visit to the scene showed the fire a half mile further up the hill and raging fiercely before a strong wind.

About noon there disembarked in six divisions Bliss' staunch section gang commanded by a big burly Irishman with the euphonius title of Mike Leisurly. He deliberately started a fire, cooked the coffee and prepared the midday meal. After this refreshment the redoubtable Mike and his cohort stormed up the hill in a solid phalanx at a terrific pace. When he had stationed his men where they could work to the best advantage, Caesar commenced preparations for the nights campaign. All the fishermen in the neighborhood were enlisted as well as a couple of employees of the Brockway Hotel. The fishermen were apparently satisfied with the expected pay of 30¢ per hour and subsistence but they objected to being found especially when there was any strenuous work to do.

After a hard nights work with these forces the fire was gotten under such control that with careful watching it failed to spread any more although the wind blew with terrific force for three or four days.

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Forest Officers as Game Wardens

by

V. C. Noddin

There has been considerable discussion pro and con by persons both within and without the Service on this Forest regarding the wisdom of appointing Rangers, Deputy Fish and Game Commissioners.

One of the arguments heard against Forest Officers being Game Wardens is that it will cause local hard feeling against the Service, which, besides making social outcasts of the rangers might be further vented by unlawful acts, such as the setting of forest fires. Another favorite argument is that the rangers are "beating some poor devil out of a job", and do not have the time and inclination to do the work.

I wish to present a few facts as to the workings of the system, as demonstrated on a Forest where I have seen it tried. In answer to the first argument, I will state that all the rangers on the Sierra National Forest were Fish and Game Wardens when I was in that vicinity. Arrests around Northfork were made by many of the rangers including my father John T. Noddin, "Gene" Tully, "Audie" Wofferd, "Boot" Taylor, and Charlie O'Neal. In no case do I believe that any of the parties arrested ever held a grudge against any of the rangers on account of the arrests and they never were suspected of attempting any reprisals in the way of fire. A number of those arrested were Indians and "breeds" who are supposed to bear a grudge, especially when drunk, and all remained friends to the Forest officers causing their arrest. It might be of interest to note that the rangers there did not receive any fees nor in some of the cases, their expense, which included stage fare and two days expenses.

The argument that we are "beating some poor devil out of a job" since the State law provides for a definite number of paid Game Wardens is not well founded. This number is irrespective of whether there are one or a thousand voluntary Wardens, such as we are. It is also stated that we might deprive some person of securing the arrest and conviction of an offender and, therefore, the resulting fee. The activity of the average citizen has never been a potent factor in preventing violations of the game laws. Almost everyone can give you a wise look, and hint of what he knows, or even make a positive statement of facts, but when you ask him to swear to a warrant, "Oh my! No." Moreover, as we do not receive any fees, or other pecuniary consideration, our activity in this work would probably cause less feeling in cases of arrest and conviction than that of a neighbor, or other game warden.

Some Forest officers may argue that their other duties will not allow them to do this work as it should be done. A recent circular letter from the District Office states that each officer must judge for himself the importance of the matter along with that of the rest of the work in his District, the same as he would Grazing, Timber Sales, Free Use, etc. As to the inclination of the Rangers in the matter, three rangers in one District on this Forest, made application last spring for the appointment, and others have expressed their desire for it from time to time. A ranger dealing with the people all of the time in the

name of the law is more apt to carry weight and respect with the position than the average citizen.

In conclusion, let us be "fair and square", using our best judgment, and preventing violations, rather than merely being active members of "the strong arm of the law". In punishing violations when they come to our notice and acting without fear or favor in enforcing the laws we will lose the friendship of no law-respecting citizen.

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Plan for Checking Erosion of Mountain Meadows

by

W. H. Babbitt

In several of the papers published by the different Forests, the subject of the destruction of the mountain meadows by erosion has been ably discussed. I have had considerable experience in checking erosion in such meadows in New Mexico, Arizona, and the southern part of the State. The erosion in these meadows was, in years long past, checked and held by beaver dams, the remnants of which may yet be found in many localities. The logical conclusion is, therefore, to imitate the beaver as nearly as practicable. The most suitable dams for the purpose, from my observation, are those constructed by the use of sacks of clay, sand, gravel or even loose light soils, if nothing heavier is available. These dams properly laid up rank next in permanence to those constructed of cement. They are readily made from material always at hand and with small expense. Willows, which usually abound in these meadows, should be cut and laid in the dam in the course of construction. If this is done in the Spring or early Summer, the willows will grow and quickly bind the dam into a solid body of great strength. I have seen such a dam withstand a flood that would have demolished a pile and lumber structure. At the worst the top is only washed over and helps to strengthen the base, which will always remain, making reconstruction a matter of little labor or expense. I can recommend this construction in reclaiming washed land of any nature, and for a dam of any kind that must be constructed without a bed rock or solid abutments.

The Manufacture of Paper

by

W. H. Gallaher

The Forest Service, in advocating complete utilization, has always been most desirous of developing those industries which consume an unused or undesirable part of our Forests. In the greater part of California one of the most difficult problems is to find means of disposing of the immense fir areas at high elevations. Both red and white fir, nicknamed, cursed and despised by lumber-jack and mill-man alike, constitutes one of the chief bones of contention in our timber sales. This disposal of our forests composed of pure red and white fir has been considered a problem of no mean proportion in the past. There is now, however, an industry which is solving this difficulty. This industry which is paper making not only utilizes fir in a number of cases but utilizes it to the exclusion of all other species.

The pulp and paper mill of the Floriston Pulp and Paper Company which use white and red fir wood exclusively has been operating for a number of years within the boundaries of the Tahoe Forest. Situated at Floriston about 15 miles below Truckee, the mill annually converts 20,000 cords of fir wood into clean fresh paper. This means a yearly shipment of about 10,000 tons.

A visit to the factory which turns a stick of wood into a roll of smooth flat wrapping paper is most interesting as well as instructive. The wood is shipped by railroad or flume to the yard and is there piled until ready for use. As it is needed, it is loaded upon small cars and wheeled into the mill where the four foot lengths are first cut into two foot sticks. Then the sticks are carried on a moving belt to a set of planers which cut off the bark. The planers consist of large circular discs rotated at high speed by electricity and on the sides of which are placed a number of cutting knives. A man takes the stick of wood and holds it against the disc until the bark is entirely planed away.

The clean pieces of wood are next fed into a chipping machine. Here they are cut up into small chips about one half inch square and one eighth of an inch thick. The

larger pieces are screened out and cut again so that the chips conveyed by the automatic elevator to the digester may be of as nearly a uniform size as possible.

Digesting is the process which separates the wood fibers and turns the wood into pulp. The Floriston Pulp and Paper Company uses what is known as the "sulphite process". A weak acid is made by burning sulphur, collecting and cooling the fumes and letting them run through a finely ground mixture of lime and mangenese dioxide. The acid is stored until needed and then pumped into the digesters. These are large iron tanks twenty feet in diameter and 40 feet high. Here the chips and acid are steam cooked for six hours. During this time part of the wood cells and the substance joining them together are dissolved away and the long clean fibers are separated. After six hours cooking the mass is blown out into chests beneath the digesters and is now known as wood pulp.

The "mechanical process" is also used at this mill. The wood is barked as in the "sulphite process", but instead of being fed into the chipper the blocks are put into grinders. These are large swiftly revolving grindstones over which runs a constant flow of warm water. The wood is ground and screened to extract the chunks, and the pulp is ready for manufacture into paper. This process, however, does not secure the long fibers which form the groundwork, but makes a soft mass which acts as a filler and smooths out the paper. If more of the "sulphite process" or long fiber pulp is used a strong tough paper is secured. If a large percentage of the "mechanical process" pulp is added a weaker but heavier paper is produced.

The water is squeezed out between rollers and when a sheet about four feet thick and six feet long is rolled out it is cut off and folded up until it is about two feet square. These wraps as they are called are stored until needed.

The next process is the mixing of the two kinds of pulp in desired proportion and the addition of sizing and coloring matter. A machine called a beater is used to do this. It is made up of a large steel tank twelve feet wide, twenty feet long and four feet high in which there are two swiftly revolving rollers enclosed in a sheet iron case and covered with dull edged knives running in opposite directions. The wraps are thrown in and passing between the

rollers are torn apart and the whole tank is thoroughly mixed. About 3600 pounds of wraps are mixed at one time. The sizing which consists of rosin, soda ash and alum is added. This gives the paper the desired hardness and finish the rule being the more rosin added the harder the finish secured. After a thorough mixing, the pulp is ready for manufacture into paper and is stored in large vats beneath the factory until needed.

Just before the paper is made, the pulp is pumped into another grinder consisting of two conical cylinders flying at opposite directions at a very high rate of speed. Here the pulp receives its last beating and all fibers are thoroughly torn apart. It flows out of this beater into a series of small troughs where it is mixed with soda ash and water and then flows smoothly out upon a very fine wire screen nine feet wide. This screen revolves at a rate of 300 feet a minute and at the same time has a jerking movement from side to side similar to that of a "jig" familiar to all miners. This shakes the fibers out so they all lie flat besides thoroughly mixing them. The water gradually drops through the screen, three steel rollers helping to press it out. The pulp has now assumed the look of paper.

It is then taken off the wire screen and is rolled upon a felt band where it is passed between more rolls and over two suckers which draw out still more of the water. last of all the paper passes around twenty five large revolving steam-heated cylinders and through one to twenty four hard steel and copper presses to give it a gloss, the more rolls it passes through the glossier or harder finish received. The paper is reeled off nine feet wide at the rate of three hundred feet a minute upon steel cores until a roll two feet in diameter is accumulated.

Tissue paper for wrapping fruit is made in the same manner. The pulp simply flows out more slowly and consequently the paper is thinner. It lies on felt bands until the water is sucked out and then is passed around a single large steam-heated cylinder about twelve feet in diameter where it is dried. It is then run between steel and copper presses or burnishers and rolled on steel cores.

The rolls of paper are carried on trucks and placed on an unwrapping machine where the paper is unrolled and run over a series of knives which cut it into any

desired width. It is then wound on one inch spindles until rolls nine inches in diameter are obtained. After the rolls are taken off the spindles wooden cores inserted in their center, and they are ready to be wrapped and shipped.

Some of the larger rolls go upon a cutting machine where they are cut in squares of any desired size. These are stacked in bundles one foot thick. Each sheet is counted, the reams are folded double and one hundred reams packed for shipment.

The mill at Floriston manufactures only wrapping and tissue papers. The company has tried to make newspaper but did not find fir especially well adapted for that purpose. Both red and white fir are used interchangeably, the white fir being slightly preferred as the wood is somewhat more easily worked.

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My Experience in Seed Collecting

b y

C. W. Sutcliffe

While riding in field duties early this summer I noticed quite a number of small sugar pine trees bearing cones in close vicinity of my headquarters at Michigan Bluff. I calculated that it would be a very handy and easy matter to gather the seed from these trees when the proper time came. I visited these trees early in July and noticed five of them in particular. They ranged from 8 to 10 inches in diameter and from 30 to 40 feet in height, bearing 118 well-developed, good sized cones. On the first day of August, I again visited these trees and not a single cone remained. Upon examining the ground beneath them I found cones entirely torn to pieces, some partially torn up and others that had all withered and dried up.

I have tried gathering the seed in most every way I could think of. I have climbed the small trees and shook off the cones. I have also climbed the larger ones, taking with me a long pole with a knife fastened on the end to cut off the cones, but in most cases it requires such a long

pole to reach the ends of the limbs that a man cannot handle it while in the tree. I have tried picking up the seed from the ground after it has fallen from the cones, tried shooting cones off with a rifle and have also traveled around hunting out the sugar pine trees, picking up cones which have been cut off by squirrels. These last two methods I have found to be the best so far, and especially the latter. If a person gets to a tree about the time the squirrel gets through cutting, it is very likely that he will get a number of cones for as near as I can learn a squirrel generally cuts anywhere from 5 to 25 cones before coming down. In one case I found as high as 52 cones under one large tree.

I found that shooting the cones off was faster than climbing but this is rather expensive since the rifle shells I used cost four cents apiece, even though I shot off 51 cones in 20 shots.

I got two extra large cones on one of my trips and upon taking them home I measured them, then extracted the seed. The larger of the two was 28 inches in length and contained 385 seed, the smaller 26 inches in length and containing 378 seed. The seed from both cones weighed 10-1/2 ounces. I have made tests at several times and find that it takes on an average of twelve ordinary cones to produce a pound of clean seed.

This is only my experience at seed gathering this summer, and it is possible that by next season I will learn of some way that seed can be gathered more easily and more of it.

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S i l v i c u l t u r e

A box of dendrological specimens consisting of cones and branches of red fir, white fir, mountain hemlock and mountain white pine was recently sent to the District Office for its herbarium. The red fir cones which were especially good specimens were wound with fine copper wire to keep them intact.

In accordance with a request from the District Office, Forest Assistant Gallaher made a collection of blaze marks for the use of the Forester who is preparing a bulletin on the age determination of blaze marks. The specimens will be used to illistrate how these marks are gradually covered up by a subsequent growth.

Specimens of the wood of Knobcone pine, red fir, Macnob cypress and California nutmeg have been sent in by Rangers Wilson, Gleason, and Woodburn to be used by the Forester for a study of the microrcopic structure of North American woods.

The reconnaissance party has completed its work for the season. The Truckee block is practically finished and the material on hand for a working plan which it is hoped to make this winter. Of the members of the party C. F. Korstian returned to the University of Nebraska to finish his course and act as instructor. Wm. H. McCormick returned to Pennsylvania State College and R. W. Hayes to Iowa State College. The remaining member of the party, L. J. Cronin, does not expect to continue his forestry studies.

Extensive preparations are being made for continuing the reforestation work begun last fall. Areas will be sown on the burn at Rock Creek where most of the work was done last year and on the Forest Hill divide near the Forks House. A crew in charge of Forest Assistant Mills is now busy sowing an area near the Truckee Ranger Station. Fifteen thousand yellow pine transplants will be sent here from the Pilgrim Creek Nursery on the Shasta Forest about October 15 for an area to be selected at Rock Creek. The continued reforestation work on this Forest is due to the good results obtained last year and the favorable conditions which we have for tree growth. Extensive work of this character will be carried on in only three other Forests in this district, the Plumas, Shasta and Sierra.

A Forester's sale for 930,000 board feet of yellow pine and 340,000 board feet of white fir was recently made to the Davies Box and Lumber Co. The Floriston Pulp and

Paper Company has recently applied for the timber on a tract adjoining the present cutting area. The amount to be cut is estimated to be 3850 cords. Mr. Gallaher's article in this issue on the manufacture of paper at the Floriston mills is most interesting and instructive.

The largest timber deal in the history of the Forest is now pending with the Verdi Lumber Co. The areas applied for comprise 5,400 acres and lie in Lemon Canyon and on the divide between Sierra and Sardine Valleys. The timber comprises the last big block of yellow pine in the Forest on the eastern slope of the Sierras. It is estimated that about 80,000,000 board feet of timber will be accessible to the logging operation, about two thirds of the amount being yellow pine. The prospects of making this sale are very favorable at present. The company desires 10 years in which to cut the timber. This will give ample time in which to remove it in connection with its own holdings in that vicinity with which it is intermingled. To reach this timber it will be necessary for the company to extend its railroad for 16 miles.

Timber trespass cases against the Antelope Lumber Company amounting to $702.50 and the Yuba Development Company to the amount of $769.02 have been settled since our last issue.

More seed has been collected on this Forest this year than in all the years it has been in existence chiefly because the matter was given attention at the right time. The circular letter from the district office helped greatly by giving a lot of definite matter about the results obtained by various methods in different parts of the district. The statement that the rangers seed crop reports for the year were generally unsatisfactory owing to insufficient observation and lack of care in preparation, however, brought out a defense from one of our district rangers. We are glad to give his side of the question since it was written in good faith and for information as to how seed reports could be improved upon.

"We have three reasons why we cannot give an accurate estimate of the amount of seed we can collect under our present system that we have to take into consideration when making these reports, which are as follows:

1. When our last report was sent in, for example, we had different places picked out where trees were hanging full of good thrifty cones and where we apparently had ample chances to collect more seed than we reported, but it was too early to tell that the seed was affected by worms. When we started to collect seed we found that practically all of the Douglas Fir and about 90 percent of the Sugar Pine was affected by worms.

2. We cannot plan on the fire season and in two out of the last four seasons the most of the seed dropped out while we were fighting fires.

3. The contract prices for collecting seed in this locality are too low to compete with other work. The seed collecting season opens when every good man is busy and cannot stop for a short job.

We can not give accurate estimates on Form 977 unless the seed crop can be examined by someone who can tell whether it will be affected by worms, and plans are made to have it collected by Forest Officers who do not have to stop and fight fire every time the alarm is given. It seems to me that this subject would be a good one to discuss in "The Tahoe," and this explanation is made with the hopes that it will start a discussion that will give us more information about seed collecting and reports."

This is a subject that will bear discussion at the ranger meeting. This office perhaps is to blame in asking for seed reports so early this year, and this matter will be remedied hereafter. The ways and means of collecting seed is as yet an open question. In this connection attention is called to Mr. Sutcliffe's article in this issue. By trying all the methods of seed collecting that he could think of he has acquired experience that will be valuable to him hereafter.

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O P E R A T I O N

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Seasons Fire Record

The recent rains have put an end to the fire season much to every Forest Officer's relief. We have had on a whole a successful season in comparison with our record last year. Some of our fires have covered more ground than they should, but fortunately the damage to timber has been small. A peculiar fact is that our largest fires this season did not occur in the districts where we had so much trouble last year. The appended table shows the number of fires this season and where they were located. Some of the Rangers will be surprised to see fires in their districts which may have covered less than an acre in extent given as Class C fires. There are about ten fires of this character which have been reported under Class C because of the temporary labor involved in accordance with instructions of the District Forester. The number of Class C fires does not carry much weight, however, the principal consideration being the amount of land burned over and damage done. The cost of our fires, exclusive of ranger's labor was $3210.70.

Fire Record for Season by Districts

	Class A	Class B	Class C	Area Burned Over Nat.For. Land	Area Burned Over Private Land	Outside For. No.of Fires	Outside For. Area Burned
Challenge	.	.	2	120	200	5	495 A.
Bloomfield	.	.	7	235	72	2	307
Downieville	1	.	6	476	320	.	.
Camptonville	1	.	9	719	500	2	55
Sierra City	1	.	.	2	.	.	.
Sierraville	1	.	3	3	.	2	10
Emigrant Gap	1	1	2	325	333	.	.
Foresthill	.	.	2	21	5	1	35
Nevada City	.	.	1	.	1	1	60
Truckee	6	.	1	.	100	2	1
	11	1	33	1901	1531	16	1163

The largest area burned over was in the Camptonville District but this is no indication that efficient work was not done there. On the contrary it was commanded by three lookout men and was constantly patroled in addition. In spite of all the precautions taken against fire, however, they continued to break out during the season in most unexpected places. Ranger Whittum had all the evidences of incendiary work being done, but was not able to apprehend the offender. Rangers Merrill and King were also troubled with incendiaries, both rangers having to contend with series of fires at the height of the fire season. The origin of the largest part of our fires this year was plainly incendiary or unknown. The fires started as a rule in brushy canyons away from the main travelled roads and trails. Ranger McIntosh, for instance, had his big fire in one of the most inaccessible spots in his district.

All this goes to show that we can never tell where the lightning is going to strike, and that eternal vigilance is necessary. The fire plans will be revised this winter in the light of this seasons experience. It is to be regretted that we were not in the running for protection prize awards. Our failure was due to incendiary work, it is true, but the hard conditions with which we have to contend should be all the more incentive to secure the award next season. The awards were made for July, August, and September as follows. We extend our heartiest congratulations to the fortunate forests on their splendid records.

July Awards

	Fires	Acres Burned Over
1st Class - Lassen	31	31
2nd Class - Eldorado	5	1
3rd Class - Mono	1	¼

August Awards

	Fires	Acres Burned Over
1st Class - Trinity	12	96
2nd Class - Monterey	1	⅛
3rd Class - Mono	0	0

September Awards

	Fires	Acres Burned Over
1st Class - Trinity	7	38
2nd Class - Modoc	4	1-1/8
3rd Class - Inyo	0	0

There is still a great tendency for men in the field to pay little heed to circular letters. Paraphrasing the language of the poet it appears from our observation that "Full many a circular letter is born to blush unseen and waste its wisdom on unheeding ear." This should not be so and it is proposed to remedy this common failing as much as possible by issuing to each district ranger a spring leaf binder in which to place all circular letters under appropriate heads instead of in the files. We are doing this in the Nevada City office and find it helps a whole lot.

Now that the fire season is over a number of the men chiefly used for protection work have been laid off, and soon the force will be down to the statutory list. Those whose services have terminated to date, October 15, are Assistant Rangers Poore, Chas. King, and Noyes and Guards Huckins, Myers, Williams, Peckham, Lillie, Marvin, Coupe, Howe, and Turner.

Plans are being made to hold a two-days ranger's meeting at Nevada City the latter part of November. The matter has been taken up with the District Office and if permission is obtained for a meeting it is hoped that several of the officers from there will be present.

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G R A Z I N G

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Comparison of Renting Value of Private Lands With Rates Received by the Forest Service

B y

John S. Sivertson

The District Forester has requested definite reports upon as many private land cases as possible to determine the true commercial value of the grazing privileges within the National Forests. From these reports some interesting statistics have been obtained.

It is a well-known fact that the stockmen pay a very small grazing fee to the Forest Service as compared to the prices paid for private lands within the Tahoe Forest. Out of sixteen cases on this Forest where the consideration on account of private lands is definitely known, the average price paid per acre for grazing cattle is approximately 10.94 cents as against 1.41 cents per acre, the amount received by the Forest Service for the land utilized, if figured on an acreage basis. The amount paid for sheep on account of private land averages approximately 6.85 cents per acre as against 2.19 cents per acre received by the Service. The average price paid per acre by sheepmen is figured from thirty-two cases where the monetary renting value can be accurately determined.

Using a per capita basis, the average price paid for grazing cattle for the summer season on private lands is $1.565 and for sheep 27.63 cents as against 30 cents and 7 cents respectively on National Forest land for the same seasons. Yet at times we hear of stockmen who complain of the excessive grazing fees paid to the Forest Service, which amounts to only 5 cents per month per head for cattle and a trifle over 1½ cents a month per head for sheep. It may be stated here, however, that the stockmen who lease private lands within the Forest are not heard to complain of the Forest Service grazing fees. The complaints are usually from smaller owners, outsiders and men who do not know the comparative renting value of grazing land controlled by corporations and private individuals.

C U R R E N T I N F O R M A T I O N

We trust that the men in the field appreciate our exchanges as much as the office force. Recent arrivals which will shortly be sent out are the Mono Ranger, which contains some excellent grazing matter, the Trinity Forester which is a valuable protective number and the Stanislaus Review which hits the nail on the head with an article entitled "Incendiaries or Handcuffs." The Modoc Review for August ably sums up the activities on that Forest. We are indebted to the Sierra Ranger for a bully editorial on "The Value of Observation" which we have incorporated in an article in this issue. A welcome visitor from another District is the Apache News Letter which gives us vivid ideas of a region where conditions are much different from here and how they are being met. Some of our exchanges mention receiving the "Lassen Magazine" which is the only intimation we have received so far that there was a publication on that Forest. The October issue of the Trinity Forester has some pointers on reconnaissance work which our Forest Assistants, especially, will appreciate.

"American Forestry" for August contains Dr. Dearborn's article in the June issue of "The Tahoe". This magazine now takes the place of "American Conservation" and contains much to interest every man in the Forest Service. For instance, the August number contains illustrated articles entitled "The Forest Ranger" and "Use of Telephone Lines in Fighting Fires." The subscription price is $2.00 per year which can be sent to the American Forestry Association, 1410 H. St., N. W., Washington, D. C.

"The Year Book of the Department of Agriculture, 1910," has been received at the office. It gives the area burned over last year as three million acres and the damage done as twenty-five million dollars. According to the Year Book the timber in the National Forests, exclusive of those in Alaska, totals about 530 billion feet, a considerable increase over the estimated amount last year of 400 million board feet. The cutting which now takes place does not offset the increase. Even the exceptional fires last summer hardly wiped out the increment of the year.

Owing to the desire to get the account of the San Bernardino Fire to the men in the field at once, and the uncertainty when "The Tahoe" would be next published, the letter was sent out as a round-robin. It has probably been read by you all by this time and each man has no doubt drawn a lesson therefrom, applicable to the particular condition with which he has to deal in protecting his district.

For the benefit of the Forest Officers who so generously contributed to the monument fund for C. B. Hyde, Forest Guard, killed in a fire on the Cleveland Forest, the following additional notes will prove interesting. On August 26, Guard Hyde, and three other fire-fighters were on their way from their camp on Snow Creek to the fire line. They had gone but a short distance when a number of large rocks, presumably dislodged by the fire, were heard rolling down the hill up which they were coming. Before he could avoid the danger, one of the rocks struck Hyde on the head, causing an injury from which he died in about twelve hours. It took the unfortunate man's companions ten hours to get him to camp, it being necessary in some cases to lower him by ropes made from blankets. Snow Creek Canyon, in which the accident occurred, is one of the steepest in the San Jacinto Mountains.

H E A D Q U A R T E R S N E W S

W. B. Greeley, Assistant Forester and T. D. Woodbury of the District Office have both been on this Forest recently sizing up silvicultural conditions. Mr. Greeley remained only a few days but in that time had an opportunity to get a hand in on the proposed big sale to the Verdi Lumber Co. Mr. Woodbury made a thorough inspection of our timber sales, both large and small, remaining on the Forest about three weeks. The visits of these two officers were greatly appreciated, being very condusive to the best welfare of the Forest.

Leo J. Foley and J. L. O'Rourk, field officers connected with the General Land Office were in Nevada City looking up cases of illegal cutting on public lands outside the National Forest.

Supervisor Bigelow made a final trip over the Forest for the field season in September, visiting the Foresthill, Camptonville, Downieville, Challenge, and Sierra City Districts. On October 11 he attended a hearing in a homestead case at Truckee.

Deputy Supervisor Pratt spent the larger part of August in the Truckee and Sierraville districts where he visited the reconnaissance party, and timber sales in company with Mr. Woodbury.

Forest Assistant Gallaher spent a few days in the office the latter part of September working up a report and map on the proposed sale to the Verdi Lumber Co. On October 5 he met Lumberman Kennedy who has been stationed on the Plumas Forest this summer and went over the area involved with him.

A certain Forest official who visited Nevada City became very much impressed with the effectiveness of the water-shooting fire towers erected in different parts of the town. One night he had a dream in which he saw a water tower on every forty acres within the Tahoe Forest, each manned by a ranger. It is to be sincerely regretted that this consummation in our fire protective scheme cannot be attained. Perhaps that is the way they do in Utopia, but the water in California wouldn't go around even if we had the towers dreamed of.

F. H. Smith, Chief of Maintenance in the District Office recently visited the district rangers headquarter's for the purpose of finding out how our filing scheme for men in the field is working out. He reported a very interesting trip which was enlivened by a forest fire, the only one in the Nevada City district this summer.

Henry Zorhorst has been appointed water-gage reader at Freeman's Crossing by the Geological Survey. This will relieve District Ranger Whittum of many a long ride to that station.

Let it not be thought that because there are occasional frivolous items in "The Tahoe" that it is not gotten up with all seriousness and for the advancement of the men on this Forest. We want to avoid our magazine getting too "heavy" and when one of the rangers told us it had that tendency, his hint seemed a good one. It is said that "variety is the spice of life." This applies to reading matter as well as everything else, only care should be taken that it is not too highly spiced.

The District Forester has sent a letter of commendation to V. C. Noddin for his close and effective application to the Rangers Correspondence Course last winter. He was examined on four books in the course. R. C. Woodburn also deserves special credit for the three books on which he was examined, two of them being the hardest in the course. Several of the other rangers received excellent marks and were only a few points behind the leaders.

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N E W S F R O M D I S T R I C T S

Downieville District:

The Halls Ranch Ranger Station house is now completed. It presents a neat and homelike appearance in the shade of a group of black oaks. If there is a wide awake young ranger on the Forest who is contemplating taking a partner to journey through life, and longs for an abode in a region remote from settlement, here is an excellent opportunity for him to begin housekeeping next summer.

The hay crop on the Serpentine Ranger Station was rather light this season, only about one ton being harvested although there was an abundance of peaches and apples.

On September 14, Assistant Ranger Chas. King and Carl Sutton began gathering sugar pine seed near Brandy City. Unfortunately, they were about a week too late and found the majority of the cones had opened. It is thought that about seventy pounds of seed was obtained altogether.

Assistant District Forester Woodbury spent Sept. 5 and 6 in this district, going over timber sales and district work.

After Forest Guard Ernest Marvin began duty near Scales the early part of September, the fire bug in that vicinity kin' of reconsidered matters, since there were no more fires after he began patrol.

G. E. King

Sierraville District:

Rangers Sivertson, Macy and Babbitt while recently working on grazing matters in the vicinity of Hay Press Valley were driven to shelter by a six inch fall of snow. Their attention for the following few days was devoted to a place where the isothermal lines indicate a temperature approaching that of Nevada City.

Assistant Ranger Joy went to Davies Mill October 3 where he will scale until the close of the logging season. Mr. Dooley, who is scaling on the California Lumber Co., sale recently had an attack of whooping cough.

Ranger Noddin and Guard Jesse Campbell, with the assistance of the rangers in this district gathered 52 sacks of sugar pine cones. Very little aid was received from the squirrels only one sack being gathered with their aid.

The seed collecting force, before beginning operations requisitioned the following supplies: 2 barrels of squirrel whiskey, 2 captive balloons, 1 aeroplane, 4 parachutes, 2 pair 15J' pruning shears, 2 high power rifles and 30,000 rounds of ammunition, also a surgeon, hospital ambulance and four trained nurses (female preferred). They thought this, with what supplies could be obtained in Sierraville would about complete their necessary equipment.

The horses lost by two forest officers as mentioned in our last issue were found on a ranch in Long Valley, near Purdy, Nevada. One of the horses was in fine condition, but the other was in a bad shape by reason of a rope around its nose that had severed the nostril.

W. H. Babbitt
V. C. Noddin

Truckee District:

The house on the Truckee Ranger Station is now completed according to the plans drawn up by the district ranger. It has three large rooms and the walls which are of double thickness serves to make the building very warm and substantial.

Mr. Guy Redwine, County Surveyor of Mendocino County, and party have just completed the survey of the territory between Squaw Valley and Truckee Knob which until now has been left unsurveyed on account of its roughness. This survey is authorized by the government and paid for by the Southern Pacific Railroad Co.

The boys in the Truckee district have had two treats of venison during the last few weeks, Bonta getting a spike buck and Gallaher a beautiful three-pointer.

R. C. Woodburn

Nevada City District:

Seed collecting was a failure in the district on account of the seed being defective. Some of it was wormy, and some had evidently not been pollinated as the shells were empty.

A strenuous week was put in by the ranger in this district distributing poisoned grain on the Rock Creek area as a preparation for seed sowing operations. He hazards the opinion that if the rodents eat half the tempting lunch he spread for them that they will lose all interest in seed as a diet this fall.

There was a steady stream of visitors at the Banner Tower on the days that aviator Fowler was expected to appear with his aeroplane. While many were disappointed those who did get to see him say it was the most awe inspiring sight they ever witnessed. It is to be regretted that Fowler did not get across the Sierras since he certainly was game and deserved the $50,000 prize he was after.

A. R. Ivey.

Foresthill District:

Supervisor Bigelow was in the district in the early part of September to inspect the Foresthill Divide telephone line which was recently completed. He visited the Big Trees while on his trip. These trees constitute the most northern grove in California. The largest tree which is down measures about 16 feet in diameter and is at least 300 feet long. The largest standing tree is 11-1/2 feet in diameter. Altogether there are eight trees in the grove, six standing and two down.

The first storm of the season brought from two to four inches of snow in the upper end of the District, making us feel safe from any very large fires the balance of the season. The Foresthill district was exceptionally lucky this year, having only three small fires, the cost of which was about $75, outside of ranger labor.

A forty acre planting area has been laid out near the Forks House which will be planted with sugar pine after the next heavy storm. A shipment of 255 pounds of seed was recently received from the Kern Forest.

F. A. Wilson

Emigrant Gap District:

An extract from the monthly report of Ranger McIntosh for September 29 reads:

"At the Gap and vicinity watching Mr. Fowler and his flying machine to see if he trespassed on any of the National Forest. No damage done, but considerable of the ranger's time occupied."

A number of sacks of sugar pine cones were collected in this district this fall by the rangers in connection with their other duties.

Sierra City District:

This district was very fortunate as regards fire this season, the ranger not having a fire to fight. Since fires have a peculiar way of visiting different sections each year, however, the Sierra City District may get its share next year.

Small timber sales and free use have lately been the rule in this vicinity. The chill fall weather is having the effect of making every inhabitant see to getting in his winter wood.

Camptonville District:

The Pacific Tel. & Tel. Co., has made application for a right of way 25 ft., in width from Camptonville to Sierraville. Considerable government timber will be cut, the largest amount being in the Camptonville District.

The final water power permit applied for by the Middle Yuba Hydro Electric Power Co., has been approved by the Secretary of Agriculture. This permit is for dams and reservoir at Milton and Jackson, about 20 miles of conduit line, one power house and 21 miles of transmission line. The power generated will be used chiefly to operate the mines in the vicinity of Alleghany and Graniteville.

Challenge District:

Hope has not yet been abandoned of getting a ranger station in this district. The small amount of government land which it contains makes the proposition a difficult one.

Forest Guard Myers who has done efficient duty as lookout on Pike County Peak was relieved from his station by the heavy rain the latter part of September. It is hoped to have a tower on this peak next summer similar to that on Banner Mountain.

North Bloomfield District:

The excellent fire record for this district for several seasons was very unexpectedly broken early in September when a series of fires broke out that required the attention of every available man in the vicinity. It cost a lot to put out these fires, but fortunately the damage to timber was small.

Ranger Merrill is now installed in a ranger station, the like of which we would be glad to see on every district in the Forest. There are a number of improvements to be made, but the possibilities of the place as a desirable station would be hard to improve upon.

POLYORNISAMUS PONDEROSA

"The Tahoe" Makes Hit in Japan

Among the numerous exchanges received since our last issue, none were more welcome than "The Taiyo" from the department of Forestry at the Imperial University at Tokio, Japan. In fact the members of the Tahoe force may feel distinctly honored in that the issue is a complimentary one to the Forest as is plainly evidenced by the "The Taiyo". We are reproducing the cover design, the result of the laudable efforts of Mr. Sivertson, to show the extent of the scientific and artistic attainments of our Nipponese friends.

Through the kindness of Hashimura Togo, the honorable cook at the most notorious short order house in Nevada City the meaning of the characters on the title page were made clear. According to Togo's version the design and explanatory note below have reference to an article appearing in the first issue of "The Tahoe" by Dr. Ned Dearborn, entitled "Seed Eating Animals in Relation to Reforestation". Our readers will remember that he attributed the destruction of much of the seed sown to rodents such as chipmunks and ground squirrels.

The editors of "The Taiyo" were so much interested in this article that they made it the subject of a lengthy article drawing a comparison between the enemies of reforestation in this country and the Orient from a biological standpoint. It is to be regretted that space forbids our giving the article in full. We understand, however, that it will be published in the Forestry Quarterly, and warmly advocate a careful study by all our readers. As a fore-taste of the nature of the treatise we reproduce herewith a free translation of the characters on the cover of "The Taiyo" which explains the figure of the bird above as well as form a digest of the leading article.

"The gigantic bird shown above, known as Polyornisamus ponderosa in scientific circles and commonly known as great seed-eating bird is the most destructive of the biological agents combatting reforestation on the island of Formosa where the Japanese Department of Forestry is making extensive researches. It is even more destructive than the rodents on the Tahoe National Forest, whose depredations are so admirably described in an article in the June issue of "The Tahoe" issued at Nevada City, California, United States of America. It is authentically stated by careful observers that the voracious appetite of this extraordinary bird which depends entirely upon pine seed for subsistence, is the chief reason for the sparcity of pine timber on the island of Formosa. As soon as the seed approaches maturity, the cones are savagely demolished by this bird with its powerful beak and the seed devoured or carried to the inaccessible jungles of the interior. It is conjectured that the development of the three legs, the three claws on each leg and tri-parted tail is the result of the sole feeding on seed borne by the coniferous trees of Formosa which invariably have three needles in a bundle."

Editor's note:

The original of this cover was found by Forest Assistant Mitchell and Ranger Sivertson in a logging camp in the high Sierras, and sent to the editorial staff which is not entirely lacking in imagination.

THE TAIYŌ

太陽

第拾七卷　臨時増刊

七月號要目

日露の比較研究
文明側面觀
高橋日銀新總裁
資本の國民性
南極到達の競爭
外交團の色々
對支維内閣希望
緯度變化木村項
水力電氣國有論
創作三篇
第十回懸賞脚本

口繪寫眞版十五頁

The Tahoe | The El Dorado Exchange

Volume 1 Number 4 | Volume 1 Number 2

December 1911

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DIRECTORY

El Dorado National Forest

Headquarters

Evan W. Kelley	Forest Supervisor	Placerville
G. W. Lyons	Forest Assistant	Placerville
D. E. Jones	Ranger at Large	Placerville
H. E. Dillinger	Forest Clerk	Placerville

Districts

Georgetown:		
E. P. Sutton	District Ranger	Georgetown
Ice House:		
E. L. Scott	District Ranger	Placerville
Lake Valley:		
J. P. McMillan	District Ranger	Placerville
Pacific:		
R. C. M. Berriman	District Ranger	Pacific
E. W. Fessel	Assistant Ranger	Pacific
Caldor:		
A. W. Blair	District Ranger	Placerville

Tahoe National Forest

Headquarters

Richard L.P. Bigelow	Forest Supervisor	Nevada City
Merritt B. Pratt	Deputy Supervisor	Nevada City
Charles O. LaRue	Forest Clerk	Nevada City
Violet L. LaRue	Stenographer	Nevada City

William H. Gallaher	Forest Assistant	Nevada City
Knower Mills	Forest Assistant	Nevada City
William A. Merrill	Forest Ranger in Charge of Grazing	Nevada City
Vivian C. Noddin	Assistant Ranger	Nevada City
William H. Helbig	Assistant Ranger	Nevada City

Reconnaissance Party

Districts

Challenge:		
Reconnaissance Party:		
J. C. Elliott	Lumberman in Charge	Challenge
Elmer P. Gleason	District Ranger	Challenge
Jordan H. Horwege	Assistant Ranger	
Downieville:		
George E. King	District Ranger	Goodyears Bar
Camptonville:		
Charles E. Whittum	District Ranger	Camptonville
Sierra City:		
Aaron H. Walton	District Ranger	Sierra City
Sierraville:		
Woodford H. Babbitt	District Ranger	Sierraville
Evan Joy	Assistant Ranger	Sierraville
Truckee:		
Emigrant Gap:		
John A. McIntosh	District Ranger	Emigrant Gap
Bloomfield:		
Nevada City:		
Albert R. Ivey	District Ranger	Nevada City
Foresthill:		
Frank A. Wilson	District Ranger	Foresthill

Service Changes

Charles W. King, Maurice S. Macy, Fred J. Dooley, Howard Dodson, R. C. Woodburn, W. D. Campbell, Geo. W. Campbell C. J. Sutcliffe, John S. Sivertson furloughed or on leave.

E D I T O R I A L

This issue containing the minutes of the joint Rangers' Meeting held at Nevada City by the Tahoe and El Dorado National Forests on November 21 and 22, is a consolidation of the magazines of the two Forests since it will be of like interest to the members of both.

We are now at the close of another year and we extend our best wishes to all our readers for a Merry Christmas and a Happy New Year. Time the eternal bookkeeper has allotted us 365 days in which to put forth our best efforts to make the world better for our having lived in it and unless we have done our best to advance the great cause of conservation to which we stand consecrated; unless we have done our best to secure the cooperation of everyone in carrying on and perpetuating our Forest resources; unless we have done our best to overcome the enmity of our opponents and make them our ardent friends, and unless we have treated all men fair and square and followed the golden rule "Do unto others as you would have others do unto you" as far as practicable, much of our work will have been in vain.

Let us, therefore, strive for the next 365 days to lift ourselves to a higher plane of view and overlook the many petty things of a narrow mind, to look at the broader side of life and the effect that our living is making on those around us. We can never secure the cooperation of anyone without enthusiasm and in order to make those about us enthusiastic over our work we cannot go at it in a half hearted don't care manner but must put into it our best energy. Let each of us do our VERY BEST during the next year.

The Rangers' Meeting has come and gone, leaving every Forest Officer in attendance many things to mill over as he again picks up the duties he dropped when he struck out for headquarters.

In thinking it all over do you feel that the broad views you heard discussed will tend to make the small details of your work more insignificant than ever or did it invest them with new meaning? Did you go away impressed with the idea of a system being gradually evolved, or did everything seem to you to be up in the air with no particular end in sight? Are you thinking what you said and what you might have said? Do you feel a greater sense of loyalty and more like doing your work for the work's sake?

The proceedings of the meeting are being sent out to aid you in thinking out these points at your leisure away from all influences that might be disquieting. Considerable of the discussion is necessarily omitted, but an effort is made to retain the backbone of the two day's conference. Chew it all over and may the result be a product conducive to the best welfare of the Tahoe and El Dorado National Forests.

FIRST ANNUAL TAHOE & EL DORADO NATIONAL FOREST

RANGER'S MEETING

November 21 - 22 - 1911

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PROCEEDINGS

The meeting was opened with a brief speech by Mr. Bigelow as to the purpose of the meeting, the results hoped to be obtained, and benefit which he hoped would be derived by all present.

Forest Ranger W. A. Merrill was appointed Chairman, who in turn appointed C. E. Whittum, Sergeant at Arms and Messrs. Scott, Gleason, McMillan, Babbitt and Ivey as Committee on Resolutions.

Timber Sales

Mr. Pratt spoke as follows:

One of the matters on this Forest that is requiring increased attention is timber sales on account of the many settlements and settlers throughout the Forest. We have constant applications for sales, free use, and the business is going to increase from time to time as the private timber becomes exhausted. We should endeavor to protect the National Forests and improve them. This not only means improving them by building roads and trails, but in getting out diseased insect infested and ripe timber and in cultivating the timber which is not ripe. The best way we can cultivate it is to get out the mature, insect infested and decadent timber.

We should find out what we have in each district so that when the time comes to make a sale we will know just where to direct people. The chief idea to bear in mind, as I said before, is to get out mature timber. Each man should make it an object to clean up his district just as much as possible. An old snag or a tree which is liable to deteriorate past redemption should be gotten rid of. Utilization is the prime note to keep in mind. In making small sales this point is the main thing to consider.

There is one point which I want to call to your attention in connection with small sales. We have many letters of transmittal come into the office which are often improperly made out. Sometimes the rangers fail to put on the date of the sale, name of the purchaser and in some cases does not put on the amount. This causes trouble in the office which you could avoid

with a little care on your part. Another thing, when a cutting report comes in it may show that only part of the timber has been cut an recommends a refund, without stating the cause for only part of timber being cut. Unless all the timber has not been cut on account of some fault of the Forest Service or other cause over which the purchaser had no control a refund cannot be made. If the prospective purchaser is green and has never bought government timber the ranger should take him out on the ground and mark the timber for him and if the purchaser puts up the deposit thus signifying his acceptance of the marking our share is done. The date for closing a sale should be kept in mind. There are many cases which are not closed when the time comes and this causes the writing of unnecessary letters. Every man should keep the dates for the closing of his sales in a promise card box on a desk calendar and a few days before the date for closing he should send in his recommendations either that the case be closed or an extension granted. An extension of time is permissable if the purchaser of the timber is not able to get it out owing to circumstances over which he has no control. If it is very evident that he is not acting in good faith we can close the sale without a refund.

The new timber sale contract is out and contains clauses which were not in the old one. You should get these forms right away and study them.

The cost of sales is another matter which should be given attention, especially the cost of small sales. Sometimes a small sale costs more than the revenue derived. We should aim to reduce this cost.

How are we going to lay out free use areas. Free use is one way we can clear up unsatisfactory spots which we may not be able to do by sales.

The management of big sales is a matter which is going to be put up to the men more and more. We hold the ranger in charge responsible and no matter if a lumberman, district forester, forest assistant, supervisor or deputy supervisor goes over the sale from time to time, the district ranger is going to be held responsible for the condition of that sale. Each man who goes on a sale is going to make a memorandum and a copy of his memorandum will be sent to the district ranger. It is up to him to see that the brush is piled and in such shape that he can burn it. It is up to him to see that the snags are cut down if the terms of the sale so provide and the area satisfactorily cleaned up, after the timber is cut.

It is up to every ranger to famaliarize himself with the timber sale policy for he never known when he is going to have charge of a big sale. We have got to look ahead and be ready when the time comes. Mr. Babbitt has had a good deal of experience with big sales and has done good work. He is going to give us the benefit of what he has learned.

BABBITT: Timbersales take more of a rangers time than any other of his manifold duties and rightly so, as they are his most important branch of duty. Yet in spite of this time and attention thus spent, these sales are a never ending source of trial to the ranger, his diplomacy, his temper and his Supervisor. Our great trouble with almost all of the sales has been with the brush piling and this is traceable to two factors, the first of which is the ignorance and indifference of the woods foreman as to what we are attempting to accomplish, with his desire to get through with the job as quickly and with as little personal attention as he can bestow upon it. The second factor is the aversion of the average lumber-jack to what he considers the degrading job of the brush piler.

We cannot educate the woods foreman, but we can take him at his word when he says, "You know what you want, take the men and do it yourself." Of course we do this in a way now and while the officer is on the ground everything goes smoothly, but here enters the second factor, that of the dislike of the men for the work. Each time the ranger visits the sale he finds a new crew at the work with no idea of how it should be done. Most of our sales are so small that they do not justify keeping a man on the ground all of the time and the only remedy that suggests its self to my mind, is that of making an additional charge per M. ft. B. M. and ourselves take over the work. I believe that we could contract the piling and by securing an effective crew, get exactly what we want at approximately the same expense to the Service that we now incur for a piece of work unsatisfactory to us and unnecessarily expensive to the lumbermen. I believe with such an arrangement we could dispose of much of the dangerous litter of tops, limbs and rotten logs that we do not now even attempt to handle. I would like to try this experiment, or even try hiring men by the day, as I am confident that the quantity and quality of the work done in this line this past season can be improved upon.

Several very disastrous fires during the past season on some of the best timber sale areas in the state has led the District office to appropriate money for fire breaks and the general cleaning up of all areas with a view to lessening this danger. This is beyond a doubt a step in the right direction. It appears to me, however, that if this expenditure is to be made, the proper time for cleaning up would be when the brush is piled and burned. I am confident that this appropriation taken with the sum advanced by the loggers to cover brush piling would enable us to do the entire clearing up of the area more expeditiously and at a considerable saving of expence over our present operations.

Our new contracts embody a clause requiring the loggers to fall all snags and diseased trees and if these trees could be burned within a reasonable time, it would serve in a

great measure to check the spread of the infection as well as serve as a fire protection to the Sale area and these snags and trees could be burned, if bucked up and properly piled with the brush.

I am not in favor of building fire lines in this forest. We do not own enough land to enable us to place them in proper stragetical positions, and a line around a cutting area is in most cases impractical, these tracts being usually bounded by legal subdivisions instead of natural boundaries. In my opinion, with the snags and dangerous litter properly burned we have all of the protection that is practical or necessary. I may have given the impression by the foregoing that we have not accomplished a great deal in sale management and I want to correct this. I wish that I could show you the low stumps and the utilization of tops and butts on private lands after a lesson in logging and milling government timber, as an evidence of what can be accomplished by our methods. I count these lessons in utilization a great forward stride for the conservation of our timber. If they will slaughter the trees, they may as well make lumber of them, as every foot utilized saves that amount of living timber for generations to come, which we trust will have passed from barbarism into such a state of civilization that the word conservation will have some real meaning to them.

GALLAHER: They have tried to contract piling a number of times, but contract piling was not a success. It is just as much trouble when the lumberman has it done by contract as by day labor. We would have the same trouble.

BIGELOW: It has been successfully done by contract on Floriston Pulp and Paper Company sale.

GALLAHER: Yes, but at a cost of 25 cents per cord. There has never been a sale on this forest that piling has cost less than 25 cents per thousand.

PRATT: It should not cost more than 15 cents if handled properly.

BIGELOW: I would like to hear some one discuss the idea of charging 25 cents per thousand more and having the brush disposal put into the hands of the Forest Service.

GALLAHER: Would you set an arbitrary price of 25 cents or make an estimate of the cost of cleaning up and set the price accordingly?

BIGELOW: I believe it would be better to make an estimate of the cost and set price accordingly.

THOMPSON: Yes. You could have a separate transaction for brush piling, but it should not be included as one of the conditions in the contract. It would have to be a separate agreement, because if it were written into the contract we would have to turn over to the State its pro rata share of the receipts.

Scaling

DOOLEY: I find in scaling that our present rule works all right. I think that we have pretty nearly a uniform system of taking out rot and check and deducting it from the amount in the log.

CALLAHER: I believe that the system is fairly uniform. I think that we are trying to make it so, but I think a great many scalers, sometimes at least, rather rely on their own judgment and discard all rules, that have been set down. I think it should be understood that the rule should be followed explicitly so as to reduce the matter of scaling so that there will be just as little as possible left to the judgment of the men. Of course a certain amount of judgment must always be used by a scaler. If we could get the matter down to a point where there is very little left to the judgment of the scaler it will be more satisfactory.

BIGELOW: Have we had any trouble with rot and check in scaling?

JOY: I have had no trouble at all in that respect.

HELBIG: I have done some scaling. I have had no trouble. The people are very good and whenever anything went wrong they would always tell me and have the proof right there. They were very good and tried to comply with the regulations.

JONES: Mr. Davies told me one time that the actual cut on his sale actually over run the scale enough to pay for the timber. I believe the rule is something like 8 percent to 10 percent for a circular saw.

BLAIR: I have heard it was always understood that the over run on a million feet is something like 5 percent for a circular saw.

MCMILLAN: Last season I was scaling on the sale Mr. Dooley mentions and I found that logs ran from 12½ percent below to 9½ percent above.

JOY: I check scaled at the Davies Mill and it was not satisfactory. The check scaling with a band saw there is such an over run that your own scaling does not seem right. The over run was at least 10 percent, and ran as high as 15 percent to 20 percent over.

BIGELOW: Davies mill is handled almost perfectly.

Cost of Cutting Snags

HILBIG: On the Rossen & Condon sale they tried to pull the snags down with a donkey engine and found this method to be a failure. After that they tried cutting down the snags and sawing them up into lumber, but got practically nothing out of it. They then tried blowing them down with powder and found it dangerous on account of fire. After these experiments they again went back to cutting them down altogether. I find that the average cost per snag under this latter method to be about $2. apiece - that is to limb, pile and make ready to destroy by fire.

PRATT: How much merchantable timber did you get out of the 8 snags?

HILBIG: Nine hundred and eighty feet. The purchaser was given a reduction of 25 cents per thousand feet to fell the snags.

IVEY: Was the amount of reduction sufficient to pay the purchaser for cutting the snags?

HILBIG: I think it was about even.

(Mr. Wilson here recited the merits of giant over black powder, both from standpoint of effectiveness and fire danger. He stated that with giant it was possible to do about three times as much work with less than one-fourth the danger.)

Messrs. Gallaher, Lyons and Whittum also discussed the subject of felling snags, both with powder and cutting down, arriving at no definite solution of the problem.

Marking

GALLAHER: The general policy of marking as far as worked out is to leave a certain percentage on the ground so as to return in about thirty years for a second cutting. We don't know how fast our trees are growing. The policy of marking is still in the air. We don't know whether we are favoring the right species. We don't know that white fir is the poorest tree in the stand. Incense cedar was always considered the least valuable but it has now been determined that it can be used in pencil manufacture. All we can do now is to favor the pine and try to get out the fir and cedar, and take a chance we are going right. Everybody knows how we mark and the appearance the sale ought to have after marked. Around Nevada City hardly any trees were left and today we have a fine

reproduction. We don't know whether ten trees to an acre is enough - but we do know that we ought to leave a good percentage of the stand (about 1/3), and figure that it will come back, and until this is proved wrong we should continue this policy.

Free Use

PRATT: My idea is that every ranger ought to have a free use area. There is entirely too much time spent in going out with free use applicants. I know that there are parts of this Forest where it is hard to get areas on account of mining claims. The thing to do is to locate and mark these areas when they can be found.

GALLAHER: I think in the vicinity of towns like Sierra City and Downieville a small free use area is especially desirable. It is certainly one of the best means of keeping the cost of free use down and after the people get to know where that free use area is a ranger does not have to go out with every applicant and show him where to get wood. All the people in the town can go out and get wood.

JONES: I believe the idea of a free use area is good but I don't think that you can turn the applicants loose. My experience is that if you send a man out into the woods he will pick out the best there is and consequently there is nothing left but the most undesirable trees and other people would rather buy their wood than take what is left. I believe a good way of cutting down the cost of free use would be to have certain days to go on the area and decide what trees the applicants can take. They are usually in such a country where it could be done by reason of the fact that people have very little to do in the winter months and by taking a number out at a time it would be possible to control the free use business and cut down the cost.

SUTTON: I have an area near Georgetown that I have been using with great success so far. I have marked a few trees on an area that was burned over about a year ago, and so far they have piled the brush and left the area in good shape.

BIGELOW: In the Supervisor's Meeting last year the point was brought up of letting people go out and getting dead timber anywhere without a permit. I believe the general opinion was that it would not do - that we ought to issue permits. I would like to hear what this meeting thinks about turning people loose to get timber where they please.

WALTON: I think it would be a good idea on areas along a road and cannot see where any harm would be done without

a permit as long as no timber is cut. I would give verbal permission but would not allow them to go into the woods to do it.

BIGELOW: Would it not be just as easy to issue a permit for such use?

WALTON: In the past this has been the rule.

KING: It might be all right to pick up wood along a road but if you told them to go out in the woods they might cut down a tree.

BIGELOW: I think it would be dangerous to turn people loose and do not see that it is any more trouble to write out a permit.

JONES: I do not believe it possible to clean up any area by turning people loose because they would go out and clean up the best and it would not be any nearer clean in the end than when started.

HATTON: In selecting free use is it not the rule to mark the trees to be cut?

WALTON: In some instances I have picked out quite a number of dead standing cedar and marked out ahead and when people apply for free use I tell them where those trees are, but I find like Mr. Jones that they take the best there is.

SUTTON: I told them the timber had to be cut clean. I marked the trees on an area probably 100 yards square and told them they had to take it clean.

WILSON: I do not favor turning people loose in the woods. I would rather continue to write out permits than let the people go where they please and use their idea as to what is dead.

Handling Small Sales

Mr. Woodbury was asked some time ago to contribute an article for "The Tahoe", and on his arrival on the second day of the meeting handed the editor the following contribution. Since it bears directly on the discussion it is given at this time.

Because the Tahoe has a railroad and many small settlements, it has more small sales (sales amounting to less than $100 in value) than any other National Forest in California. Such sales are always most interesting to me and I was therefore extremely glad of the opportunity I had this summer to meet

so many of the men of the Tahoe on their own "stamping grounds" and to go over their work with them in the field. As you know one of the mottoes of the Service is the "greatest good to the greatest number." I have always felt that our small sales were more in line with this sentiment than our large ones. In an isolated community the residents are usually dependent largely on the National Forest for fuel and building materials. They must either secure their supply from this source or transport it long distances at large expense. The product of large sales on the other hand generally goes into the open market where the demand is comparatively less insistent and the supply large. Therefore the importance of sales cannot be judged by their size. Often the sale of a few thousand shakes for local use accomplishes more real good than the sale of several million feet of building material which is shipped to some of the big lumber centers where it is sold at a bare margin of profit in competition with lumber from a dozen other sources. This is a point to be borne in mind when your work on small sales gets irksome.

When marking sales, careful attention should be given to the selection of the area. Settlers naturally always wish to secure their fire wood or other material as near their residence as they can and insofar as possible this should be allowed. However, in the case of green timber this cannot be allowed sometimes without marking for cutting trees which are needed for seeding and protection purposes, and in such a case the applicant must of course be required to go farther for his material. Wherever practicable it is a most excellent plan to set aside a convenient area in your district as a free use and small sale area, and to confine all of this class of business to this tract insofar as possible. Often times you can clean up a bad fire trap in this way. Some of you are already doing this with fine results. Such a practice concentrates your work and aids in keeping down the cost of small sales since several can be attended to at once. Generally, I believe it is best, when selecting a cutting area, to place it back a short distance from public highways, although this may cause the purchaser a little more work. There are two reasons for this. One is the fact that the public in general do not favor cutting along highways, since it generally mars the landscape. Again the greatest danger of fire is along roads and the brush resulting from cutting is always a menace unless very carefully cleaned up, and even then there is danger of fire before this cleaning up can be completed.

Above all else, you should be absolutely sure that the cutting area selected is on National Forest land. If there is the slightest doubt in this respect in your mind, be sure to settle it by a survey before making the sale, otherwise either you or some one else in the future will have a troublesome case to settle. In small sales in which all of the trees are to be marked for cutting, it is not at all necessary to blaze out a definite area, since you have absolute control of the cutting. When the material is not to be marked for cutting,

however, as in the case of dead and down timber, or oak for cordwood, it is preferable to blaze out the cutting area in order to prevent the cutting being scattered over too large a tract.

From the Forester's standpoint marking is undoubtedly the most important work in our sales, since by our marking we can regulate to a very large extent the future composition of the forest. In marking careful attention should be given to the removal of diseased and fire scarred trees. The three most prevalent and destructive tree diseases on the Tahoe are the orange-colored mistletoe(Razoumofskya) which has a fancy for pines, the top mistletoe (Phoradendron) which attacks firs, largely killing their tops and causing them to break off and the cedar heart rot (Polyporus amarus) which causes the holes in the heartwood of incense cedar. It is comparatively easy to tell from external appearances when a tree is affected with either of the first two diseases mentioned, but to tell whether or not a cedar is rotten is a harder matter, since the fruiting bodies of the fungus do not remain on the tree long and are rarely ever apparent in the summer season. By close observation one can often detect the hole left in the bark of the tree which results from the breaking off of the fruiting body. When this is detected it is of course a sure sign that the tree is rotten. A preliminary study conducted in the Stanislaus Forest this spring by Dr. E. P. Meinecke tends to lead to the conclusion that in the locality studied dry rot is most frequently found in trees over 26 inches in diameter. Diseased trees should be removed because they spread disease and fire scarred trees because they are weakened and therefore make but slow growth and also because in their weakened state they are more subject to disease or insect attack than healthy trees. All insect infested trees should also be marked. These can easily be distinguished by the so-called "pitch tubes" or little bunches of pitch filled with sawdust which appear on the bark at the point where the insect went into the tree.

Scaling next to marking is perhaps the most important branch of sale work, since by careless scaling methods a good deal of money can easily be lost. Much care should always be taken both in taking measurements and in computation. Logs with irregular cross sections on the small end should be measured two ways at right angles and the diameters averaged before reading the scale. Log lengths should be checked up frequently to be sure that no more than the allowed over run for trimming is being taken by the purchaser. Since scaling of defective logs is largely a matter of judgment based on experience every man who has scaling to do should follow as many questionable logs as possible through the saw in order to find out how various defects effect the scale. Special

scale books have been provided for use in small sales and these should always be used in sales of sawtimber. The practice of tallying diameters in a notebook or on a scrap of paper is not satisfactory, since it has been found by experience that errors in computation are more apt to occur than when the scale book and scale stick are used on the ground. These small scale books may be used for several sales. When one sale has been cut out, the sheets in the book which pertain to this sale may be removed and forwarded to the Supervisor with the closing report and the remaining sheets in the book used for future sales. It is not at all advisable to accept the purchaser's scale of material involved in a sale even though their is no reason to doubt his honesty. We certainly cannot trust all purchasers to scale and any discrimination in this respect in favor of those who are considered trustworthy is almost sure to lead to criticism and dissatisfaction on the part of others. It is a loose business method and should by all means be avoided. Generally by a little forethought, arrangements can be made with purchasers for scaling periodically in connection with fire patrol or other work in the vicinity. This tends to keep down the cost of administering small sales which is comparatively high under the best management and which should be held down to the lowest figure possible consistent with proper enforcement of the contract.

I am going to pass over brush piling and utilization for if discussed at all thoroughly, I fear the editor would consign this article to the waste basket because of its length. These questions were taken up pretty fully in the field and I believe you all have a good idea of the standard of work required of purchasers in these respects.

Just a final word about closing of small sales and extensions of time. I found this summer that in a few cases sale contracts had expired without recommendations for closing or extension. This should be watched carefully. Every sale should either be closed promptly on or before the date of expiration of the contract, or if circumstances justify it a reasonable extension of time should be granted on or before that date. In some instances extensions of time have been granted after the expiration of the contract. This is bad business and technically impossible since after the contract has expired it cannot legally be extended. The easiest way to guard against this is to make a promise card for a date about two weeks before the close of each sale. When this reminder comes up steps should be taken to find out whether the case can be closed on time, or whether an extension is necessary or advisable. In this way you will be able to get your closing report, or extension papers into the Supervisor's office before the closing date.

Silvical Experiments

GALLAHER: There seems to be a widespread feeling among the force at large that silvical experiments are not of very much value, that they are a useless waste of money which could be spent on improvement, fire patrol, etc. The first thing to prove to you is that a Forest Assistant is not a technical man, but a practical man -- First and last we are PRACTICAL men. Whenever I hear some one calling me a technical man I wonder if I should not grow a stubby beard, wear gold rimmed spectacles, and be called professor, as a true technical man should. We are just as much practical men as the rangers, the only point of difference being that we try to look out for the future, and try to see what is going to happen 50 years ahead. A trained forester who is not a practical man, who does not work for the present as well as the future and who does not keep a just conception of the present as well as the future is of absolutely no value to the Forest Service. On the other hand it is true that those who do not believe in this work and who do not see that it must be for the future as well as the present are equally inefficient. The work of 50 years from today is just as important as the work of today.

The object of scientific forestry which is the object we are striving for is to produce a sustained annual yield of timber and to keep this up forever, and make our forests produce the maximum sustained annual yield in quality and quantity. To accomplish this we must strive in our timber sales, to mark the timber so that we will secure a good second cut, reproduction, increased growth, and to favor the best species. We don't know what is best. We must make some investigations to find out what is best. In order to produce this sustained annual yield we have got to have some figures on growth; we have got to have some figures on reproduction; we have got to have something DEFINITE and the only way to get something definite is to make investigations - to experiment.

One of the most important studies which we have started is the study of growth. On one of our large timber sales we have laid off a 20 acre sample plot, surveyed this accurately, mapped exactly the position of every tree and stump, placed numbered tags on each tree over six inches in diameter and measured these to the nearest tenth of an inch. In certain periods -- about every five years -- we are going back and measure those trees. We will find out whether those trees are growing fast enough to produce a profit. At present we do not know what sized tree it will pay to leave and what size we should remove. We will not know until we find out how fast our trees are growing and whether or not they will grow faster when we cut out the larger trees. By measuring the trees on our sample plot every five years for a

period of time we will know just what will happen on other sales areas and will, therefore, know just what trees it will pay to leave and what to cut. In other words, we will know just how to cut our timber to make money.

We started another experiment this year. Its purpose is to find out how long it will be before our stands of second growth are ready to cut and what timber we will obtain at the time of cutting. We are also endeavoring to find out whether or not it will be profitable to thin out these stands in order to let the trees grow faster. These figures will not be exact but we can get figures that will give us a start.

Again we are studying reproduction in order to find out just how to mark and cut our timber in order to favor the best species.

Then there is planting. Everybody wonders why we are planting. It costs us a whole lot of money and a lot of hard work. Everybody thinks it is pretty nearly useless. On our forest here we have large burned areas. We have manzanita deserts and we have all kinds of soils. Those areas are not producing anything now nor will they hereafter. We must get timber there. We must find out whether we can plant trees in the brush and succeed or whether it will be more profitable to wait until the timber comes in of its own accord. When we do find out what we can do we will confine operations to areas where we know what we can do.

So you will see that our work is for a definite practical purpose. It is not merely of scientific interest, but in the end will enable us to make forestry profitable. All our improvements, all our fire patrol and lookout can not give us a revenue without the timber to produce it. It will do you no good to save the timber from burning up if we are to throw it away afterwards. We must have some definite, businesslike and correct plan of management which in the end will return a financial revenue or else our labors are lost. The farmer who does not rotate his crops or keep improving the breed of his stock, no matter how hard he works, will barely make a living, but the scientific farmer who runs his ranch correctly is the one who goes to town in his automobile. Let us, therefore, pay attention to these things which are so necessary, let us find out what crops to grow and how to grow them instead of rushing heedlessly ahead and in the end we will be riding in the auto and not be plodding along in the rut. We want to get to work and find out what to do.

Seed Collecting

(Mr. Berriman here explained the system used by an extraordinary man - an expert in his line - in seed collecting on the Eldorado. He explained how in scaling trees he used a 1/4" cord to get the rope up into the tree and that the rope was then tied to the trunk of the tree to prevent outward swing. By the method used he was able to get down about 150 cones an hour. The most time was lost owing to the crude methods used in cleaning the seed. The net cost of collecting the pine seed was about 37½ cents per pound - 35 cents for the man's labor and 2½ cents for Forest Officers labor.) He stated that with better methods of cleaning seed this amount could be reduced at least 10 cents more.)

NODDIN: When we first went to work we were rather green on the subject but I think the only way to collect seed is to take a large tree and a rope and put the rope over a limb by any possible method and let one man hold the rope below and the man in the tree pull himself hand over hand. There seems to be a good many ways of getting cones off, but I think the only way practicable is to use a hook on a long bamboo pole. The best success can be had with a V shaped knife tied to such a pole and all you have to do is reach out and give it a quick jerk.

BABBITT: The large cost of our seed collecting was due largely to the fact that our men were inexperienced in climbing trees. We had one or two men who could move around in the tree as well as on the ground, but a man who is afraid will only do about 1/10 as much work as an experienced man. When we get experienced men we can do our seed collecting much cheaper.

GALLAHER: I think if we go into seed collecting on a large scale we should have a fanning mill and be able to do it cheaper.

KELLEY: The method used by the man on the Eldorado proved that the matter was simple. Where he spent the time was in cleaning the seed. He had no sheets even to dry the cones on. He leaned them up against rails and shook the seed out with a stick. He had no improved implements or methods for cleaning the seed. He tried blowing the dirt out with his mouth and finally with a portable forge, and finally ended up by sifting the seeds and dirt apart with an oil can punched full of holes. With a fanning mill to clean the seed I think with a man like we had we can collect it at a cost of 25 cents per pound. Several men of the proper ability can do all the seed collecting that would be required. The man we had collected 500 cones in one day.

LYONS: What are the advantages of following up timber sales?

BIGELOW: On this Forest we have had no success in following up timber sales for seed. They always cut the trees at the wrong season of the year or do not cut them fast enough.

Planting

GALLAHER: I have already discussed the subject in general but to open the discussion would like to call for answers to these questions. Would it be practicable to burn small patches on large areas covered with manzanita? What tools should we use in planting? Is the hoe or spading fork best? What is the best method of poisoning?

CAMPBELL: I think to burn manzanita patches before planting is done would be an improvement. I believe a fork is most preferable of the tools. As to poisoning, I think that corn or barley is better than wheat.

WILSON: We found after experimenting with wheat considerably that rodents did not touch the wheat at all. We finally set traps with wheat and seed to find which was preferred. Then we tried corn and wheat and found corn the greater success. I am satisfied that it would take double the amount of poison to the same amount of corn. I have been told by a man who has made a business of poisoning rodents in Sonoma County that barley is the best of all. Barley has a peculiarly bearded surface which takes the poison.

GALLAHER: Wilson's idea of poisoning corn is an excellent one. Rodents take it where they will not touch wheat.

MCINTOSH: My experience with tools in planting has been as follows: If it is a manzanita thicket and there is a large amount of brush I think forks are best as you can reach in and stir up the place. If it is an open area and light soil I think a hoe is best. I like the hoe in preference to the fork where it can be used.

PRATT: I would like to get an idea on using a corn planter.

IVEY: I think a corn planter would be a great success in light soil.

Reconnaissance

LYONS: I believe reconnaissance will be a great help to the ranger in his regular work. We run a strip one chain wide through each 40 acres and make a map of the area. In the first place we find the corners, pace out lines, locate any alienated land and post the boundaries. One of the first things a ranger wants to know about his district is where the corners are and just how he can follow the lines through. We can do this work more easily than he can.

The reconnaissance crew is generally placed in districts where fire danger is great and the ranger most always knows where they are located so if there happens to be a fire in the district he can call on the reconnaissance crew. Again it helps the ranger by giving him an idea of what he has in his district. He wants to know what timber he has, what the possibilities of a sale are; what chances of reproduction are, and so on. After we get through with our field work we have a bunch of maps to prepare and these help out a great deal because township plats are not accurate. In case a ranger wants these maps for use in his grazing work, June 11 examination, or any of the thousand and one things that come up he can always use these maps to advantage.

GALLAHER: From the work this summer, one of the greatest helps reconnaissance has been to the ranger is marking an X on a tree where the line crosses a road. It is surprising how quick a man locates himself when he sees one of these Xs and notches. This is especially true with a new man in the Service as a new ranger.

WHITTUM: I found reconnaissance a big help in the way of finding corners. After the reconnaissance party had worked in my district we issued a number of special use permits on land previously claimed by people.

Insect Infestations

BABBITT: I treated four insect infested trees on my district and for some reason the bugs stopped work. We took an augor and bored into the trees for about eight inches and poured in creosote. I thought creosote would be like oil and kill the bugs. In those four trees it appeared to, but, of course, I must cut the trees down to decide what the results were.

ARMSTRONG: I had an idea that a live tree filled with creosote would be killed.

BABBITT: I was under the same impression but one of the experiments was on a tree not more than 6" or 8" in diameter and a hole was bored completely through the heart of the tree and it is still living. These trees were treated from six months to a year and a half ago and not one of them has died.

ARMSTRONG: That's a new one on me.

BIGELOW: I would like to know if insect infestation is on the increase.

MERRILL: It is increasing very rapidly in the Bloomfield District. Many more trees died this year than ever before.

KING: The same is true in the Downieville District.

BABBITT: I was of the opinion that this insect business was something new but when Mr. Miller was through my district he claimed that this had been going on a great number of years just about the same number of trees dying each year and operating all over the Forest. It is certainly killing timber and doing about as much damage as the fires.

BERRIMAN: I thought insect infestation was on the decrease on the Eldorado.

MCMILLAN: There is more or less insect infestation throughout my district in lodgepole pine, but I have only been in that country one season and cannot say whether it is on the decrease or not.

PRATT: About all we can do is to continue our improvement cutting and get such timber out of the woods as fast as we can.

BIGELOW: We have a bug on this Forest on the California Lumber Co. sale in the reproduction, but I presume it is owing to its sickly state.

BABBITT: The area was not cleaned up until more than a year after being cut over which was no doubt the cause of this beetle. This was the engraver beetle and after working in the brush it went to the young trees.

ARMSTRONG: I understand in Washington Professor Kincaid has discovered a parasite that will destroy such bugs and believe such an experiment would prove valuable on this Forest.

Grazing

The subject of Grazing was opened by Mr. Hatton as follows:

In the 19 National Forests of California the grazing of 206,750 cattle and horses, 10,575 swine and 474,870 sheep and goats was authorized. These were the Secretary's authorizations but they were not quite taken up by the permits issued. The Tahoe ranks twelve in the number of cattle and horses and the Eldorado ranks eleven in the number of cattle and horses -- the Eldorado having 8200 and the Tahoe 7700. The Tahoe ranks four in the number of sheep and goats and the Eldorado eleven. Grazing has been considered by some as a new thing, but it existed long before the National Forests were ever thought of in this country and will no doubt continue to exist for many years to come.

One thing is true in Grazing. We have to deal very much with the every day life. We are dealing with every day utilities and money values all the time. The annual forage yield of our National Forests now supply 8,000,000 sheep and goats and 1½ millions of cattle and horses, and is utilized by more than 27,000 individuals and concerns, besides furnishing free grazing for thousands of settlers, prospectors and travelers. One thing I have been trying to emphasize during our district organization is the point of what relation grazing has to all our other Forest interests, especially that of silviculture, and to try as hard as possible to harmonize the two.

We do not want to interfere with the business interests. It has been the studied policy of the Service to work along the line of least resistance to the extent of not upsetting existing conditions. The part that the National Forests have played in the past, they will continue to play in the production of beef, pelts, mutton wool and hides. We can get some idea of the production of our Forests from this illustration. If the animals grazed on the National Forest could be placed in single file and could span the seas they would lap around the world five times -- 125,000 miles.

As I said a moment ago, so far as we can, we work along the line of least resistance. We have done this with a great degree of satisfaction to ourselves as well as the stockmen. The time has come when we must look at grazing from the outside -- consider its relation to the Forest itself -- and if the foresters in this country fail to do that they fall far short of the obligation put upon the forester. The grazing policy of Europe cannot be practiced here because we will have grazing with us for a long time to come. It is a large economic factor demanding attention. There is a great deal of discussion over the district as to what extent grazing is injurious or beneficial to the reproduction.

There is no question in my mind but what heavy grazing is injurious, but just to what extent it may be injurious or beneficial to the Forests we must work out. There is one way in which I believe grazing can be made beneficial instead of injurious. That is in fire protection. How much does grazing contribute to fire protection by keeping down the grasses and weeds? Grazing must also be considered in its relation to the live stock industry. We have been trying for the last year to get relative figures on grazing outside and inside the National Forest. We find that lambs produced on the Modoc Forest weigh on an average of 10 percent more than lambs grazed outside.

There are some very good grazing men on the Tahoe and Eldorado and in discussion I would like to have you express your view of what can be accomplished.

MACY: I think that the grazing of sheep especially should be in smaller bands than they are at present. Bands should be 1,000 head rather than 1,600 to 1,800. I think all these late controversies are caused by verbal agreements between the cattlemen and sheepmen. Throughout the Forest there are a number of mountain meadows which the sheepmen exchange for hillsides under a verbal agreement. I think these agreements should be made in writing and both parties to the agreement furnished with a copy, the ranger a copy and the Supervisor sent a copy. I do not believe there is much damage being done to the young growth.

BIGELOW: Would it be possible for the ranger to get such a written agreement from the two parties interested and send a copy to the office?

MACY: Yes, I believe it would.

BABBITT: Grazing is separate from the other kinds of work and especially in my district. There is one tract where three districts corner in and there are frequently three district rangers on the ground to settle controversies and as soon as they are gone the hatchet is again dug up. I think it would be a good plan to have this tract all put under one assistant ranger and handle grazing only.

MCINTOSH: I believe that would be a good plan. There is another matter to consider. One man may pull his stock off early in the season, leaving his range in good condition. A second man will then come in and feed off his range and when he moves off the range it is in bad condition -- considerably overgrazed.

BABBITT: A band of about 1,000 head of sheep can be watched by one man without being pushed through the country. They have a number of sheep scattered out and if a man only had as many sheep as he could watch and not trample over so much ground, which is the real cause of damage to reproduction, there would be no injury to the Forest or the range.

Range Boundaries

IVEY: I think in a great many cases the marking of range boundaries would be advisable. In my district I have never had any trouble. All the permittees know the country as well as I do and I have never had any trouble with them.

WILSON: My experience has been that we have only had trouble in a very few cases. The majority of the grazers have run on the same or approximately the same range year after year. We have changed the boundaries on the map a little but it seems to me that if two fellows are grazing on the same range and they are satisfied, and as long as they feed it to their own satisfaction, there are very few cases where it is necessary to mark it out. I had one man on the east end of my district where there was trouble and we got the parties together and ran out the range lines and marked them. Aside from that I do not know of any serious trouble we have had in the last four seasons. There has been a little trouble when a new grazer came in, of course, and a little adjustment was necessary on our part. I think in time to come it would be a very good plan to mark out the boundaries for the satisfaction of Forest Officers, and I believe this could be done when the range reconnaissance is done.

MCMILLAN: In my country the range boundaries are natural divisions, ridges and streams. In a good many places it would be hard to get to the boundary to mark it. A great many of the ridges are so steep that stock will not stray off the range. There are places, however, where it would be well to have the boundary marked. I think that all the patented land in the southern end of my district should have the boundaries run out and marked. It seems as though the ranges as a whole are satisfactory the way they stand since the natural boundaries are better than trying to adhere to the legal subdivisions.

BABBITT: There are a few places that range boundaries should be marked. There are a few places in nearly every range where there must be a division made on account of patented land and only in such cases do I think it necessary.

JONES: I have found that the best way, as a rule, to settle a dispute, is to meet all parties interested in the controversy together and settle the dispute in that way.

KELLEY: My experience has been that we are liable to listen to too many controversies that do not amount to anything and will in time be adjusted between themselves if left alone.

I have taken up market study in a small way and have not yet been able to get any definite data in that respect. It seems that cattle coming from the Forest are in better condition and weigh heavier than those grazed on the outside.

SIVERTSON: The main fault we have here is the private land. The cattle man or sheep man does not lease the same land each year that he leased the year before or several years before and if you were to mark out those boundaries the way he leased his land you would have that all to do over again next year or in two or three years.

I believe that range disputes should be settled as far as possible by the ranger on the ground. The rates received by the Forest Service are a great deal lower than those received by private individuals or companies for their land.

HATTON: The stockmen through California will not admit that the fees received by the Forest Service are lower than those paid for private land.

What has been the tendency towards consolidation or the small man going out of business? Last season we asked for an expression on this subject and Mr. Pratt I believe answered from the Tahoe and submitted as good a reason as we got. He thought it was due to economic conditions and the high cost of living. The time has come when a man must concentrate his energy on some occupation. A man cannot turn his stock loose in the mountains and let them run loose without being watched, and take them out in the fall with a profit.

JONES: I believe it is due to a great extent that all the private land in the valley or lower range has increased in value. As a rule the small stockman does not own much land and a good many are selling out to larger owners on account of having no winter range in the lower country. A man with a small band of cattle cannot make a living at that alone.

SCOTT: I believe a man with 50 head of cattle cannot afford to pay the grazing fees charged on private land in the foothills.

KELLEY: Down in the country south of here the dairymen are depended upon to raise the stock for the cattle man. The foothill range has depreciated in value on account of overgrazing and climatic conditions, and the larger man could not buy sufficient cattle to stock-up sufficiently to make up the loss on account of the small man going out of business. It was absolutely necessary for him to purchase cattle and it is not due to any fault of the Forest Service that our grazing business is falling off. There is no chance of it coming back until there is something done to upbuild the stock raising industry.

Range Improvement

BABBITT: One small experiment has been tried on my district. That is sowing red top on a lodgepole flat which had been grazed to the limit. This area was sown two years ago and all the land was wet enough to support the red top, which has spread all over the flat. The experiment was a great success on this area and the grass has come up as thick as it could stand and grown to a height of about two feet.

KELLEY: On the El Dorado the higher mountain meadows were rapidly being depleted by prairie dogs or ground squirrels and we carried on a little experiment, and it must be said it was entirely successful as far as it went. We put poisoned grain on the area. I do not know if the proper quantity of poison was used but evidence of the destruction was found both on the ground and under the ground. In all cases the squirrels were found dead.

HATTON: The Modoc has made a number of experiments with timothy and red top but they have been a failure. This has been due partly to the season of the year in which the seed was sown. In the spring of 1910 the Forester gave us a certain amount of money to spend in reseeding experiments. We had to get busy and set out undesirable areas, and in most cases the areas selected were ranger stations and small areas of that character. The season was most unfavorable and I think if the same experiment had been started in the fall it would have been a success.

WHITTUM: I tried Italian Rye Grass on the Van Hagan ranger station without turning in the soil. The seed was sown on the 23 of December and on June 22 a heavy stand of rye grass was there. It did not stand the drought during the summer and all died out.

KING: It was a total failure in my district. It was sown at a higher elevation than Mr. Whittum's area and it is possible that the heavy frost raised it out of the ground and killed it in that way.

Forage Plants

HATTON: The idea of collecting range specimens is to get the forage value of the plants identified, as well as the identifications. I hope the rangers will work up an interest in the collection of forage plants. I tried this summer to see what I could do. We traveled around in a cart on the Modoc and without any loss of time or detriment to ranger work collected in duplicate 170 different forage plants. A lot of this work can be done while we are doing other work if we just make up our mind to do it.

The question of Forest Officers being appointed Fish and Game Deputies was thoroughly discussed pro and con by Noddin, Scott, Babbitt, Jones and others and resolution was put up to the resolution committee and afterward voted on. The discussion is omitted.

Accounts

MR. THOMPSON gave a brief talk as follows:

Uncle Sam guards his money rather carefully. There are certain things that always have to be borne in mind by the Fiscal Agent. These are the regulations of the Treasury, the letters of authorization and the fiscal regulations. In other words, for every expenditure there must be authority and instructions and it is necessary to show on the account all this information. When preparing an expense account there are a few things to bear in mind -- have you the proper authority to incur the expense; have you the proper instructions and is there money appropriated to meet it. Those are the things that the disbursing officer must consider when the account is presented. The Fiscal Regulations cover the points very well. The instructions on the back of vouchers are also useful in stating the account. Another point is the arithmetical phase of the matter. You would be surprised to see the number of times we get accounts stating six nights lodging at 75 cents amounts to $1.50. All these points should be considered by the ranger. They are the cause of delay in payment of an account in a majority of the cases, when it is necessary to return the account for correction or additional information.

Settlement

PRATT: We formerly did not pay much attention to settlement on this Forest, thinking we had very little land which could be classed under the Act of June 11, but this year we have had as many cases as we have had altogether since the Forest was created. The idea previously has been to have one man make a specialty of June 11 work since there is considerable policy involved which has to be studied up. In the future this work will be put into the hands of the District Rangers more or less. As a rule the applicant gets his application papers through the District Ranger and it would help a whole lot if he would find out from the applicant what lands are going to be applied for and see that the application is made out right.

There are three classes of applications on this Forest. We have applications for small ranchers which are legitimate propositions as a rule. We have applications for a whole townsite in order for its residents to obtain title to their property, and then we have applications for mountain meadows. In many times the latter are desired simply as reservoir sites.

When it is necessary for the district ranger to make a report the main thing to decide is whether the land is agricultural or not. We cannot pass on what the applicants intentions are. If the land is agricultural we must recommend it listed under the Act of June 11. I would like to hear some expressions on what we should consider agricultural land.

WILSON: On the majority of these places in the mountains you can put in a crop of grain in the Fall and harvest one crop whether there is any water or not. My experience has been with the majority of these little mountain places that a settler will go out and plant a garden, put in a potato patch and raise quite a good sized crop for a year or so but if he follows it up four or five years he will get almost nothing. When a case comes up under the Act of June 11 where they have a small place and build it up and have fruit trees and vines and raise grass, fruit and hay, I do not see how we can get around it. You take the June 11 applications at Yankee Jims in my district. You can hardly mention any crop that has not been raised on this land at some time. Some of this land has been irrigated and some not. In a majority of the cases, however, where there was no water the crop would be almost nothing.

Claims

KELLEY: Out of some 106 claims on the Eldorado which covered the country two or three years ago, we have now but four left to report upon. The others have

either been canceled or are pending now in the Interior Department. On the Tahoe agricultural claims work is at the minimum. I believe there is but ten agricultural claims on the Forest and probably only three of them will ever come to a case. In claims work our greatest trouble has been to get reports and affidavits from the rangers. Reporting on a claim is kind of a tough proposition. The examiner goes on the ground and sees conditions and has his opinion, but in conveying that opinion to the Supervisor and the Supervisor in turn to the District Office, the facts in the case are many times lost. In other words the examiner fails to conceive that he has not given all the facts in the case. Many times he has the facts in his mind and thinks the other officers know then just as well.

Forest officers making reports should collect all the claims data from year to year, even if it is a repetition and file it in the case, so that when the case comes up for patent they will have all the facts in the case.

The original homestead act was very explicit. Out of the original Act passed in 1862 and revised in 1882, there has been to the present time about 15 volumes of decisions written. One thing we must remember. It must be the mans home, to the exclusion of a home elsewhere, for five years.

In the matter of affidavits, no one appreciates more than I do the difficulty of obtaining good affidavits. An affidavit should state by years what the claimant has done. That may appear to your mind as superfluous, but unless an affidavit contains what the claimant did from year to year it is useless.

Mineral claims will continue on the National Forests forever but the reporting is largely taken out of the rangers hands, Personally I cannot see why a ranger is required to report on mineral claims at all, since his report is always followed up by an expert miner. Nevertheless he is required to do it and should do it right. One of the reasons for this is that very few of the rangers have had sufficient experience along this line and are not competent for this work. In reporting claims of more than ten acres in extent, each ten acres should be surveyed out and an examination made of each individual tract to learn what value that piece of land may have for mineral purposes, unless in some cases the land shows that it does not contain mineral.

I believe that in the H. H. Yard case, the Secretary decided that the claimant was required to show a discovery of mineral on each ten acre tract, and we all know that he is required to show mineral on every 20 acre tract by the General Land Laws, and if the work on any part of the claim tends to develop the whole claim that information should be shown in the affidavit.

BIGELOW: In reporting on mining claims the good faith of the applicant is considered greatly with the discovery and the work done. It is a good plan to bring the good or bad faith out in your report in good shape.

KELLEY: An officer may report there is a million and a half board feet on a claim. If there is any probability that the case will come to a hearing, he should be able to back up his estimate with an exact statement. The question may be put to him at the hearing as to how many board feet are in a tree three feet in diameter and 100 feet high. If he is unable to answer that question he will be adjudged incompetent to say how many board feet are in a tree.

Uses

MCMILLAN: There is a distinction to be made between commercial and non-commercial uses as a basis for the annual rate to be charged. One thing I have found. A person can easily spend too much time in examination and reporting on uses. For instance, a person will want a small camp and a tract of an acre or two and a charge of $5. is all that can be made. Oftentimes the applicant is more or less unfamiliar with the country and expects some information from the Forest Officers. If a Forest Officer will do it he can easily spend more time on such a case than the income will amount to in four or five years. This is one of the things a Forest Officer must guard against. Many of the old cases have not been tied to any definite object so that it is impossible to locate them. This state of affairs should not be. Every area should be tied to some definite object so that every Forest Officer can locate each corner at any time.

WALTON: My idea is to survey out the land where we are sure it will be eventually used for special use and plot the number of lots so that when one lot is applied for it can be reported on without the ranger going over the ground. This will have a tendency to reduce the time spent and decrease the amount of time required on each individual case. In my district there are several small lakes where special use permits have been applied for and all the land around these lakes will eventually be applied for. It is such land that I have reference to.

BIGELOW: I think that is a great scheme and at such places like Lake Tahoe and Gold Lake we should survey all the government land into lots and number them, write

articles for the papers telling of this land and instead of people being required to pay $1000 for a lot lease them one of ours for five or ten dollars a year.

KELLEY: My experience has been that the land in this country is so rough that it is only here and there that a piece of land level enough for a residence site can be found that can be surveyed.

Products

ARMSTRONG: The local office of Products, in its work of securing the best possible utilization of Natural Forest and other timbers, finds it necessary to have an organization different from that found in any other office of the Service. At the present time the personnel is made up of three Forest School men, one chemist, one mechanical, and one civil engineer. This will give some idea of the problem which it is forced to face, and solve. Sometimes a problem is too complex for our slender means, when it becomes necessary to refer it to one thoroughly equipped central laboratory at Madison, Wisconsin.

In lightly going over the work that we are doing, I will submit my remarks under the heads of species.

Sugar Pine:

Strength tests are to be made, during the coming year, upon specimens of this timber. This will be done in connection with a comprehensive series of tests covering all of the commercial timbers in the United States. We, at one time had in this District a testing laboratory, in cooperation with the University of California, but this was discontinued about a year and a half ago. All tests upon California woods must now be made at Seattle, or Madison.

Arrangements have also been made to make experimental steam distillations upon the needles, twigs and cones of this species, to determine the yield and character of the merchantable products obtained.

Western Yellow Pine:

We are investigating this species with regard to its value as a fence-post, telegraph pole, and sea piling timber in connection with preservative treatments by creosote, of course. In the two former uses it is undoubtedly a success, taking the place of the more expensive cedar and juniper poles and posts.

On the California we have treated 16 and 22 foot poles for permanent improvement work, at a total cost of [illegible] cents per pole, using creosote drums as treating tanks. They were, of course, seasoned poles, as green poles require an excessive amount of time in treating.

Some years ago the Service, in cooperation with several electric companies of Southern California creosoted several hundred 40 foot poles. An absorption of 6 pounds per cubic foot, and an average penetration of 3 inches was secured on 7 feet of the butts, at a cost of $1.24 per pole. An inspection made last September, showed these poles to be perfectly sound, whereas 86 percent of those that were set untreated at the same time were thoroughly rotten at the ground line. This was 5 years after setting. As the treated poles had to last only nine months longer than the untreated ones to pay for the cost of treatment, the success of the experiment is obvious.

As a result of these treatments the San Joaquin Light and Power Company has already erected a plant to treat cedar, white fir, and western yellow pine poles; and the Southern California Edison Company is planning to erect one during the coming year.

In Honey Lake Valley, on the edge of the Plumas, we have a portable treating plant in which have been creosoted several thousand fence-posts for the ranchers in that locality. The plant is hauled from ranch to ranch, and the posts treated for 15 cents each. Round, seasoned yellow pine poles are treated for one hour in hot oil at from 170 to 180 degrees F. after which they are allowed to stand in the cooling oil for a half hour longer. Old pine fence-rails, used as posts, will absorb 8 to 12 pounds of oil per cubic foot in from 3/4 to one hour in hot oil.

In Scott Valley, on the Klamath round posts have been treated for the ranchers at 15 cents per post. When thoroughly seasoned they take oil readily. The plant used there consists of two galvanized iron tanks , 5' x 5' x 8½', costing, with their heating coils, $203.50.

As a pile timber western yellow pine will not, I believe, prove a success. We have set experimental piles both in San Francisco and San Diego Bays. The untreated pine piles showed, after one year, a severe attack by the marine wood-borers. Creosoted pine piles were in better shape, but, at San Diego, one of them, treated with 22.5 lbs. of creosote to the cubic foot, showed a slight attack.

Nothing is known with regard to the strength of western yellow pine; and for that reason tests are to be made upon it, the material being furnished by the Madera Sugar Pine Company.

Tapping experiments have also been performed during the past two seasons, and several thousand pounds of crude oleo-resin secured from trees on the Sierra National Forest. These tappings show that the grade and yield of turpentine and rosin from the oleo-resin is about equal to that of the Southern pines, from which our commercial turpentine is obtained. We have to determine whether the yield of oleo-resin from a given area of pine trees is such as to warrant tapping on a commercial scale.

Similar experiments to those on sugar pine, are to be carried out, during the coming year, on the needles, twigs and cones of the yellow pine.

Jeffrey Pine:

Tapping experiments have also been performed on this species, during the past season, on the Lassen National Forest. The operation takes longer as the wood was found to be harder than that of the other pines, making chipping difficult. It is probably that the Jeffrey pine oleo-resin will not yield turpentine, but another product called abietene. The trees have, in the past, been tapped by private individuals, who have manufactured medicinal compounds from the distillate of the oleo-resin.

Steam distillation experiments will be performed on the needles, twigs and cones for the same purpose as those on the sugar and yellow pines.

Jeffrey pine fence-posts have been successfully creosoted in Honey Lake Valley, as a cost of 15 cents per post to the ranchers.

Lodgepole Pine:

Several million of these trees have been attacked by wood-boring insects on the Lassen. The trees are in pole forms and sizes, and for that reason the Service has made arrangements to ship a carload of them to the San Joaquin Light and Power Company, for tests as to their availability for pole purposes. The Company is to pay the expense of cutting, transportation, treating and setting. If this trial is successful a market may be found for the dead and dying lodgepole, especially as a railroad will, in the course of two years, be built through the infested area.

Tapping experiments on this species were carried out on the Lassen last summer and this fall, but were not successful.

The needles, tips and cones of the conifer will also be the subject of steam distillation tests.

Digger Pine:

The digger pine has been tapped on the Sierra during the past two seasons. The oleo-resin of this pine does not yield turpentine, but a product called heptane, which is invaluable on certain chemical tests. If enough of this product were made available, a steady demand would be made for it by chemical laboratories all over the world. The demand, at present, is almost nothing, but this is due to a belief that it cannot be supplied.

Steam distillation tests will also be performed on needles, tips, and cones of the digger pine.

Western Hemlock:

Owing to claims that have been made concerning this species as being superior to Douglas fir for sea-piling, we have included it in our piling experiments at San Francisco and San Diego. After seven months it has shown a slight attack by the marine wood-borers. On some piles, parts of the bark still adhere, and at such places the piles have not been attacked.

Douglas Fir:

Poles of this species were treated for permanent improvement work on the California. Creosote drums were used for tanks . The poles that were cut and peeled in the summer, case-hardened, and could not be successfully creosoted, even at a cost of 30 cents per pole for 22 ft. poles.

The same difficulty was experienced in our experimental treatments upon Douglas fir cross-ties, in cooperation with the Southern Pacific Railroad, where with long boiling in oil, and pressures up to 150 pounds per square inch, a very slight penetration of oil took place. The Southern Pacific Co. uses zinc choloride exclusively on their crossties, although it is but a slight protection in moist soil.

We have also placed Douglas fir in our pile experiments, both creosoted and untreated. Untreated piles were attacked to a slight degree by the marine woodborers in seven months. The creosoted piles treated with 10 pounds of oil to the cubic foot, were not attacked at the end of th a year.

Patented pile protections were also applied to Douglas Fir piles, but these have, except on one or two instances, been attacked by the marine wood-borers within a year.

The tapping experiments made on this species on the Lassen, were not successful.

White Fir:

White fir seems to be a good telegraph and telephone pole timber. Above the ground a pole of this species will last 10 years at the least, where red cedar will be rotten in the sapwood both above and below the ground line. The butts, then are the only parts that need treatment.

It was shown in the permanent improvement work on the California that thoroughly seasoned white fir can be successfully treated with creosote. In fact, the Santa Fe Railway is now creosoting white fir ties.

A carload of white fir poles is to be sent by us to the San Joaquin Light and Power Co. for experiments as to their value when creosoted for power purposes.

White fir is also an A No. 1 material for paper pulp, as experiments at our Madison Laboratory have shown. The Floriston Pulp and Paper Company use large quantities of it in their pulp manufacture. We are now trying to interest paper companies in a white fir proposition on the Shasta, where about 200,000,000 feet are available in a good location close to the railroad and water power.

White fir was also used in the Boucherie experiments on the Eldorado during the past year. By this process copper sulphate is injected into the whole pole. The experiment is of great interest, as it is the first of its kind ever performed in America. In Germany and France the majority of telephone and telegraph poles are treated in this manner. It is only of value in localities where the soil is fairly dry. Similar experiments, on a more extensive scale, will be carried on next spring and summer. Several species will be tried out, using copper sulphate, zinc chloride and a patented preservative known as Aczol.

The needles, twigs, and cones of this fir, as well as those of the red fir, will be subjected to steam distillation tests during the coming year.

Incense Cedar:

Boards of this material were sent to two eastern pencil companies for trial. It was found that it would answer for the cheaper grades of pencils, as it had a good grain, stained well, and whittled easily. It has been used at a pencil factory in San Leandro for this purpose. Lately it has been discovered that one of the large eastern pencil companies has been corralling the incense cedar output of several mills.

Incense cedar boards were also tried out as a cigar box material. The essential oils that it contains, renders it unfit for this use, as cigars are rendered nauseating when stored in these boxes.

This species was also included in our pile experiments. After a year it showed only a slight attack by the marine wood-borers.

Several hundred incense cedar posts were treated at the portable treating plant in Honey Lake Valley. The severest treatments failed to inject the creosote satisfactorily; while the cost, 20 cents per post, was excessive.

The needles, twigs and cones of this species are to be included in our steam distillation experiments.

(Mr. Armstrong's paper included the discussion of a number of species not on these Forests and we have omitted these from the minutes owing to lack of space.)

Education

R. C. WOODBURN. (Read by Mr. Pratt)

In order that the men in the field may realize the full benefit of their positions, a carefully selected reading course has been outlined and provided for by the District Office. After having looked the course over carefully and after completing three of the books assigned, my views of the course are about as follows:

In undertaking the reading and study of the different books, there are many things which resemble the climbing of mountain peaks. In the first place the books differ in magnitude and elevation on the one hand, and in character or that which makes them peculiarly interesting on the other. This is very apparent if you consider and compare any two of the books of the course.

There is probably no one who cannot remember the apprehension with which he looked forward to certain fields of study, which had to be undertaken when an education was being sought. Some troublesome subject such as higher arithmetic, grammer, history, music, or spelling was always looming up across the horizon as something, well nigh, unsurmountable, uninteresting, and unprofitable. In the fields of higher education these seeming obstacles and difficulties become more numerous; just as the great peaks become more numerous when the higher regions of the Sierras are reached. But the real scholar does not allow any of these heights to stand in his way but finds his greatest enjoyment, and incidentally his greatest benefit and profit, in mastering every subject or course which comes in his particular range of investigation.

Now a Forest Ranger doesn't pretend to be a deep scholar or a "book worm". This side of the service is being looked after by the technical men. But it is well known to us, that an able Ranger is expected to be very much of an all around man. And above all things he does need, is breadth of view. This is one of the important things to be gotten from the Reading Course. Incidentally, I might add; that a considerable amount of that mystery, which we consider envelopes the technical man, may be dispelled when we realize that they study these same books at Yale, Harvard, Michigan, and the other Forestry Schools. And also when we know that before the correction of examination papers is completed a considerable amount of reviewing of these same books will have to be resorted to. This is as it should be since it requires additional thought and a shining up of wares, and is a source of pleasure to every technical man who is assigned the task of looking over the papers.

One of the special features of the Course is, that it has not only a beginning but also an ending. The tests which follow the completion of each book are not intended to force careful study but they form a natural conclusion to the course and give a man something of a measure of his ability to read and assimilate. This course affords at least one special opportunity. Unlike most educational opportunities, there is nothing compulsory about it, and no penalty imposed even if utter failure to understand the books is experienced. This is a condition, which is very unlike the scaling of a Lookout Point or a difficult peak in order to accomplish some very necessary piece of work. In this course, an opportunity presents itself which can only result profitably.

To make the benefit to be derived more plain, let us remember that much as we would enjoy a trip over the trails with Mr. Graves or with Mr. Pinchot, there are a comparatively few men in the Forest Service who can expect to even meet them or see them. But they have given to everyone, through these books of theirs, the opportunity of

seeing things and of reasoning and thinking about things from the elevated points of view which they have attained. These view points were not arrived at easily and without effort, but were plainly attained from years of practical experience, reading, study, and association with the best thinkers on both sides of the Atlantic. More than this these are exceptional men to begin with, and they have gained the greatest proficiency in presenting what they know. Since these books which they give us are the results of their most intense efforts, we can probably derive more from them than we could possibly gain from extensive conversations with the men themselves.

Each book affords an extensive view from some definite point or other of the very subject which is constantly before a Forest Ranger, namely, Forestry. And it is surprising how clearly the authors have presented their subjects. This is one test of a good book, clearness and simplicity, and even Fernow's work on the Economics of Forestry, aside from a few large words, is clear and not too difficult to read while it is actually a surprise to find out how easy it is to read the assigned portions of Graves' book on Mensuration. This being the case we surely cannot miss reading the book of the foremost authority on the principal of Conservation for this is the key note of Fernow's book; nor should we wish to miss reading the book which explains the why and wherefore of such practical things as scaling rules and volume tables as they are told about in Graves book on Mensuration. But the books that seem to contain the greatest number of interesting topics are the Primers I and II written by Gifford Pinchot. Don't be deceived by thinking that because they are small that they will be the easy ones to study. Aside from Sudworth's book, they are in my estimation the hardest books in the course, that is, if the time limit for reading them is considered, and the examination questions are well answered.

The ideas obtained from these Primers bring up chain after chain of thought. So interesting are their chapters that the number of pages read or to be read is forgotten, and we find ourselves weighing the writer's thought; agreeing and disagreeing with him. We will find ourselves making all sorts of comparisons between the pictures he paints and those which we remember from our own experiences. More than this we are apt to find ourselves looking forward to the time when on our trips through the woods we can look at already familiar places and objects again to see if the writer is describing conditions as they actually are or whether he is merely giving us a lot of theoretical stuff.

For some of us an undue amount of pleasure will come from the chance to criticize what to us are very apparently mistaken views. But on the whole, whether we agree or disagree with the author, if we catch the elements of interest contained in the books we are the gainers. We will ever afterward have a little different point of view, undoubtedly a higher one from which to look at these vital elements of Forestry.

More than this, from the numerous examples and illustrations given which are taken from all parts of the United States, and also from other countries, we see that our districts are only small parts of a great whole. And as we read more and more we realize that others have been working along similar lines to ours in other places. We are thus given the benefit which always comes from comparing our lines of work and endeavor with those of an experienced and master hand. We are also steering away from that belittleing channel into which anyone is liable to get caught, this is "localism". We are well aware of the effect that long residence in some one corner of the globe will have upon an individual. We see people who are types of certain localities and ages wherever we go. But there is nothing stagnant about the Forest Service and this Ranger's Reading Course is especially intended to keep us abreast of these progressive times and if for no other reason than this one it should be attempted.

Someone has said that there is a mighty big difference between a man who has something to do and the man who has to do something. There is also a great difference between one's attitudes before and after accomplishing something that at first looks very burdensome but which in the end turns out exceedingly profitable. With this course there is something to do, offered; nothing to be lost, and unquestionable gain to be derived.

WILSON: The District Ranger of today is looked to for reports of all kinds and expected to follow systems that have been tried and found to be the best. By studying this reading course he will know what systems have been tried and found to be the best. Occassionally we have some fellow that starts in to make light of the Service and if we have a good fund of general information and make three or four cracks at him, telling him something he does not know, instead of making fun of the Service you have an interested listener. It seems that Mr. Gallaher hit the nail on the head this morning when he said the technical man was a practical man. If he were not a practical man he would not have taken that course. I think that the technical men are practical men and that the so-called practical men are not practical men.

We have had so much discussion of the work a Ranger or "Government Handy Man" as he is sometimes called, has to do, that we might call his work an immense mountain that can only be scaled by using the ladder of knowledge. At first each Ranger started to climb on his own Ladder of Knowledge, fashioned after his own idea. Then it was realized that if each man started at the bottom and spent a life time in the Service, that they would eventually attain about the same height and none of them be able to attain the top. Then they discovered that the best timber to build with was System and the fastest builder COOPERATION. Then they started the system of ladder-way building by cooperation to scale this mountain of work. The man who has spent twenty years studying Timber gave his knowledge, the man who has spent twenty years on the Range has given his, so in turn each man has given his knowledge to build into the Ladder-Way of Cooperation that will eventually reach the top of this mountain of work and there attain a perfect system of Forestry.

It is now realized that the life time of a Ranger is far too short to study out a system along each line of his work from his own observations. He must be able to profit by the other man's experience and take up the work from where he left it and carry it on in such a manner that his successor can continue on from the point where he left off.

In the Ranger's Course we have a history of the knowledge obtained by several different men, each one upon a separate line of investigation. In this Course we have a chance to learn in a few months the knowledge that the other fellows spent several years in obtaining. Men who have spent twenty years in the timber have left us a written description of their best methods of Cruising that we can read in twenty minutes.

A ranger might be thoroughly practical and might know every inch of his District and yet have need of this Course to teach him some of the most vital parts of Forestry. There is scarcely a day goes by that he does not have use for some of the information given in this course. It will help him in making his reports, in classifying timber, in his system of management and in his dealings with the general public. It teaches him to observe closely and to write an accurate description of what he has observed. It gives him an idea of what has been done outside of his own territory and shows him how other men have overcome the same difficulties that he has to contend with. It explains

the advantages of several different systems and gives him a chance to adopt the one most suited to the conditions existing in his own District. It broadens his view and causes him to realize that there are hundreds of men on other Forests all working for a perfect system of Forestry. It gives him a chance to get a large amount of technical training given in special courses of Forestry.

BIGELOW: There is nothing to lose and everything to gain in taking this course and I think those that take it will become better and more efficient men.

Forest Supervisor Kelley opened the meeting with a brief speech and appointed Forest Ranger E. E. Jones of the El Dorado, Chairman.

The first subject brought up for discussion was Ranger District Management which was opened by Mr. Bigelow as follows:

To bring up the work on a National Forest to its highest standard it is necessary that each Ranger District be taken as a unit by itself and a system be worked out for this unit.

The District Ranger and each officer under him must work as one man to bring this system up to the highest efficiency. The next step in good management is to bring these District units under one management and work out a system for the Forest which is the unit of organization in the general management of the District. Our first work and one which needs our closest attention is the management of each Ranger District. It is then the business of the Supervisor and his office force to see that the units work in harmony and form a system of management for the National Forest.

We must each and every one of us on a Forest be a part of the entire system and bring our efficiency up to the highest standard in order to make the management of the Forest ideal.

Scientific management is getting the greatest amount of efficiency out of every unit of an organization. How can we bring up the efficiency of every man on the Forest to his highest capacity and have an ideal system and management on the "Tahoe", and "El Dorado"?

One of our first steps should be in stopping the "leaks". I will try and call to your attention some of the "leaks" and also where we can bring our efficiency up and start on the right road to ideal management.

One of our worse leaks in the Forest work and a leak that wastes more time than we can afford to lose is not completing a job when it is started. An officer will travel 10 miles to make a special-use report. He will obtain part of the information required and go back to his camp, finds out when he starts to make his report that more information is needed, and he has to make another trip and perhaps another before all the information required is obtained, losing valuable time on the road. Again he is requested to make a report on a claim. He makes a rapid survey, perhaps finds part of the lines and looks over the claim, forgets all about the affidavits and only half of the information wanted is obtained. When the report is submitted to the Supervisor he is requested by him to make another trip to obtain further information and more complete affidavits, again wasting valuable time on the road.

On a June 11 examination he finds when he is making out his report that there are several questions in the report which he entirely overlooked and another trip has to be made to find out some trivial item which is necessary to complete the report. Can we not use some system in our work and not go at it in the haphazard way we are so inclined to do.

Before starting out to make an examination of any kind look over carefully the outline of the report or the questions on the form. Take it along with you and refer to it on the ground and be sure that every point is covered, full affidavits are obtained, when these are necessary, and finish your job while you are on the ground and save the time lost in travel and also the annoyance of being requested time and again for further information.

Plan your work ahead. Of course, these plans will be knocked in the head a dozen times by fires and unexpected circular letters but change your plans to meet the conditions.

The only way we will ever become efficient officers is by laying out our work ahead. I believe it can be done in our service just as well as it can be done in private work. Our fire plans this year have shown what good results are obtained by planning ahead.

First learn your District thoroughly. Find out what you have, where the Government land is located, (not approximately but accurately) and locate the mining claims which are liable to go to patent. Run out the lines and take notes on the work performed, and find out who you can obtain information from and take notes on what each man knows. Keep a folder and have the material in your files so that when the Supervisor asks for a report you can look over the case, know just who you have to see and what you have to do before you start to make the report. Always be ahead of the game in other words.

In grazing study your ranges at every opportunity. When patrolling instead of aimlessly traveling along the trails or road, go with a fixed plan of what you want to find out on this or that trip. Take notes in your diary so you will not forget and when you arrive at camp copy off for your files, on a sheet of paper, anything that refers to a case and file it in the case.

Make your diary a source of information instead of a cut and dried statement of how far you traveled and how long it took you. Use your head as well as your hands in your work. At night stop and think what you have accomplished during the days ride. What new information have you obtained, what new corners have you located, in fact, has your days work been worth while? Have you earned your pay? If you have aimlessly patrolled with only the thought of seeing a smoke, and have tired yourself physically and also ridden your horse down just to cover ground and have not found out some new fact or obtained some information which will help you in a future report I believe you have lost time where you could have saved it.

Teach the men under you how to patrol for fire, how to lay out a trail, how to make a report, how to examine a range, how to interview a user, how to locate a corner, in fact, guide them and make them efficient forest officers and while doing so you are improving and educating yourself.

Men start out in the service and are left to themselves to pick up the intricate work of the service the best they can from the manual and circular letters, but for a new man who is not familiar with our methods these sometimes only confuse them. They are really left to themselves to either make good or get disgusted with the work and quit. For a wonder most of them make good but how much better we could all have done and how much time we could have saved if we had had some one to show us how, during the first months of our work. A new man needs encouragement

and the more of it he gets the better he does. I remember when I first started as a Supervisor a few words of encouragement in a letter from Mr. L. T. Allen, who was then an inspector, did more towards making a Supervisor out of me than all the Use Books and Circular Letters I studied.

Eventually our telephone system on this Forest will be completed and then each District Ranger will be in direct touch with the Assistants and Guards under him and also with the Headquarters at Nevada City. This is the case now in some of our Districts. When this telephone service is completed we can direct our assistants each day. Each days work should be figured out ahead and telephone instructions given to each of the men under you. Tell each of them where they can catch you by telephone at a given time and find out where you can telephone to them. You never know what the day will bring forth and you should plan ahead for emergencies.

Let us start right with the beginning of the new year. First bring our office work up to a system, keep our files in order, make cases for our forms and have a place for everything and keep everything in its place and save time in looking for letters and forms. Keep a promise card or a calendar system and keep it up to date. When you make a sale put down the date of its closing so that you will not overlook it and receive a letter from the Supervisor's office that you have forgotten to report. When you are requested to make a report or answer a letter before a certain date, put down the date on your calendar or in your promise card box so that you will not forget to answer the letter or make the report on the given date.

Keep your desks clean and your baskets free from catalogs and advertisements. Only keeping in it unanswered letters and let these be as few as possible. Answer letters promptly, especially from users of the forest.

When the field season commences have your plans laid out ahead and keep them ahead. Gather information every day you are in the field. In the morning when you start out think what you can do that day to keep ahead of the game, what claim you can look over, what trail route needs looking up, what range needs looking into, what section corners along the route you are going have not been found, what planting area you have not looked at lately, who you can interview on the route to acquire some information that is lacking in some case, and what trail or road needs a sign, What telephone line you will follow, and consider if it would not be well for you to take along your pliers. In fact make an interesting study of each days work and at the end of the day just stop and think what you have left undone and what you have accomplished towards keeping ahead of the game. Each days work will become more interesting and as you plan, new ideas will come to you.

We are always complaining that we have not time to do this or that. By planing we will find that we will have the time. Do each piece of work thoroughly and do it to day, don't put it off until tomorrow, as we are all so inclined to do. When you are directing your assistants to go on a certain trip suggest to them certain things to look up on the route and in this way train their minds to think up things for themselves.

In directing your fire patrol plan each day how all your district can be covered. If you or one of your assistants are going a distance from your regular route and thus leave part of the district unguarded see that one of your men so plan his patrol as to cover the unguarded territory.

A great deal of time is wasted on stormy days. There is no necessity for this if you will plan your work ahead. Signs can be made, filing can be done, back correspondence caught up, fire and improvement plans made, maps got up to date, manuals and forest books studied, tools sharpened and a hundred and one things to do that are just as necessary as the field work to keep the work of your District up to date.

This meeting is called to discuss among ourselves the work of the Forest Service on the Tahoe and Eldorado National Forests and to bring out discussions to help each of us to be more efficient units of our system. I hope that you will make this meeting a starter and look back to these two days as to the birth of scientific management on the Tahoe and Eldorado National Forests. Let us commence by getting just as many ideas out of this meeting as possible. Each of us can bring out something to help the other fellow and so help the system.

JONES: A well managed Forest must necessarily be made up of well managed ranger districts. To say that a district is well managed is saying a great deal more than is apparent to the casual observer or to any one who has not given the subject deep thought. A district may have a district ranger, enough assistants and guards to handle any emergency that may arise, good buildings and sufficient for the needs of the men and horses, a good system of trails, telephone lines, fire breaks and a good protection plan, but can we say it is well managed? No, I think we can say that it is only ready to be managed,

We will take up the District Ranger first. What are the qualifications of a district ranger? First a district ranger should be, if possible, a man well versed in the

Regulations and Forest Policy and above all things he should have the respect and confidence of the men under him; as this is the first step toward gaining the good will of the Forest users.

He should be a "full grown man", with that energy and confidence necessary in one who must take the lead.

He should remember that although he may have other men under him, it is not on account of their lack of intelligence or business ability, but there may not be enough places for all those who are qualified to fill the position of district ranger.

Next, the Forest users should be studied according to their dispositions, intelligence, etc. All people cannot be handled by the same methods. Promptness in meeting the business of the Forest as it comes up will go a long way toward putting a district on a sound business basis.

You often hear of a man that has been "called down". Don't do it. Many times it results from the man not being properly informed, in which case the call-down was handed to the wrong man; it should have gone to the officer who failed in his duty by not taking the time to thoroughly explain any business he may have transacted. Explain to a man and you gain his friendship, both for yourself and for the Forest Service. Call him down and he never feels right toward you or the Service afterward. Once a ranger is right with his assistants and the Forest users and has their cooperation, he is in a position to take up all lines of work in a systematic manner and it can be said that he is beginning to manage his district.

The Supervisor cannot, on account of his numerous duties, go into the detail of Ranger District Management. He can only plan the work, with the assistance of the district ranger and make inspections at widely varying intervals and unless the district ranger takes up the work and pushes it forward, the Supervisor has nothing to inspect in the end and his work as well as the work of the ranger district force shows the balance on the wrong side at the close of the season.

Now for the assistant rangers: As has been mentioned above, an assistant ranger may not be assigned to a position under a district ranger on account of any lack of ability to handle the work of a district, however, the fact that he is under the district ranger does not make his work any less important.

He should carry out the work outlined for him regardless of whether any one else on the district works or not. The fact that the district ranger may spend hours each day polishing the top of his desk with his boot heels, or that some other member of the Service breakfasts at 9:30, should in no way influence him toward following their example, for don't for a minute think that they are getting away with it because the Service is a little slow in getting around to them. It may appear to you that they are getting along about as well or a little better than you are, but the Supervisor knows how things are going and your efforts will not be overlooked in the end. The principal is to do what you are requested to do, and to do it according to instructions. The Supervisor may not be satisfied with the showing of a district ranger, but what is he going to do about it? A district must have some one in charge and unless there are other men who have shown signs of life, he has no alternative but to let things stand as they are.

I have not attempted to say anything in regard to the many different classes of work that comes up on a ranger district, for the reason that a set of excellent regulations are being prepared and sent out as fast as possible to the men in the field, but what I am trying to get at is this; - that the regulations are useless without someone to carry them out.

BABBITT: I am by no means satisfied with the amount of work that we of the Sierraville District have been able to accomplish during the past season, although I believe we have done all that we could do with our present arrangement. I am advancing the following program in the belief that it allows a better field for scientific management, which I think the Forest Service will adopt in the near future and which I should like to see initiated by the Tahoe Forest.

I believe that that part of the Forest lying East of the mountains, the Truckee and Sierraville districts, should be consolidated, as they form, taken together, a natural unit; the Sierra City and Downieville Districts should form a second such unit: the country around Nevada City, I believe, falls into other such natural Districts. I believe that each of these larger divisions should have one district ranger, his assistants, fire-guards and scalers; the assistants each to have a district of his own, laid out in accordance with the class of work he is to perform, as near as is found practical and of such size that he can actually cover it and do all of the work that he is expected to perform; the fire guards to act as patrolmen or lookouts and of course the scalers to work on the various sales.

In support of this theory, I find my time so broken into by district ranger work, that I find it very hard to do other classes of work that with a district such as I have, is expected of me, I find that I have to leave many things half completed and it often happens that the first part of the work goes for nothing before I am able to take up the subject again. By district ranger work, I mean the making out of reports, the overseeing of large timber sales, securing affidavits on claim work, trespass cases, the office part of fire fighting etc. I believe that in the large districts there is enough of this work to take the larger part of one mans time and still let him have the chance to direct and control his district.

I wish to first take up fire fighting, using the large district and supposing it to be the consolidated Truckee and Sierraville unit, with which I am most familiar.

The district ranger should be stationed at Truckee with phone connections with each of his assistants and guards. During the fire Season either he or a guard should always be on the phone and each evening receive a report from each man, as to where he will be the following day. When a fire is reported the district ranger will organize and send out fire fighters and the ranger discovering the fire can, after reporting, go to it with the assurance that help will be sent to him with food and relief assured, the battle is more than half won. The district ranger will have the time and opportunity to organize fire fighters in every town and mill and will soon know the men to be depended upon. Where there are small one or two ranger districts, there is a feeling, not without good reason, that in case of a fire on an adjoining district, they should not leave their own district unless the necessity for so doing becomes very glaring and urgent. In a large district this would be obviated, for the reason that an assistant communicates with the district ranger and if on discovering a fire at some distance he leaves his district, measures will be taken to meet any extremity that may arise during his absence.

In other words the district ranger would have ample time to organize his force with a view to concert of action at all times with an attendant saving of expenditures.

The Assistant Rangers District:

In this new district there would be a section of country grazed by sheep and cattle alone, and in which little or no work of any other kind is conducted. Under present conditions three different districts take in a portion of this territory, with the result that three different district

rangers are frequently called on to the ground to dispose of some really trifling matter, usually trespass, thus consuming much valuable time badly needed elsewhere and which as soon as the ranger is gone is repeated. All of this can be easily and properly obviated by placing this territory under the control of one assistant ranger. He should camp right with the herders, giving his whole time and attention to the grazing and in the Supervisors office, trouble would cease to be. The assistant ranger would have one great advantage the benefit of which he does not often get under the present system. If the assistant ranger finds that a very unpopular decision must be rendered for the good of the Forest, the district ranger can be called in, who will hear both sides of the question, get the facts from the assistant and render a decision in accordance therewith, it is then possible for the assistant to enforce the decision without incurring the displeasure of the herders, the district ranger bearing all the blame, which becomes "rangers diplomacy". To illustrate: On a timber sale in this Forest all attempts to have the cut-over area cleared up in accordance with the terms of the contract had resulted in almost absolute failure accompanied with hard personal feelings against the field officer. It so happened that an officer from another forest, engaged in special work visited this sale, did nothing, said little, but after his departure the ranger again issued his orders with additional restrictions and some brusqueness and intimated to the lumberman that the visiting officer had so ordered, these later orders were complied with after some grumbling and the ill feeling was transferred to the official, who, being absent was well able to bear up under it.

I believe that the district ranger can plan the work for his assistants, with their suggestions better than any person that could not know the parties interested, the conditions and the country, he would have some time with each man in his district to help carry out the plan and find out at first hand its good and bad features, I think that he could secure from his assistants the information and so classify and file the same that reports could be made at once when called for from the office, that is, the ranger knowing the nature of the information required and having the time to devote to it, could get ahead of the game and secure the information before it was called for. The district ranger should plan the improvement work after consulting with his assistants, and formulate plans for carrying out the same; arranging for the purchase of supplies and transferring them in the most economical and prompt manner. In this connection I would suggest that there be a government team at the headquarters, believing that the volume of work in past Seasons would amply justify the same.

This onlarged district with its four or five assistant rangers and possibly as many guards, will tend to enthuse the men with a desire to make it the banner district of the Forest (in the case of the district referred to, they will succeed) each man will have a sub-district small enough to afford him ample time to thoroughly acquaint himself with the problems and working of the same and will be enabled to keep up with his work at all times, in cases of an unusual degree of excellence in his work, or the successful working out of a new problem, the same will be promptly noticed and passed on to the other members of the district. In closing I would say that the change contemplated can be made without increase of force over last Season and the additional expense would be limited to the necessary improvement work that would in the natural course of events arise with the better administration of the affairs of the Forest.

Another point worthy of mention occurs to me, that is harmonious action among rangers. It is too often the case that the expressions,"I don't like that man," or, "I wouldn't work under him," or, "he couldn't work for me," are heard. It appears to me that a good deal of energy and action is thus lost to the work, I honestly think that any man who does not willingly and cheerfully perform his duty, should be promptly reported, regardless of his likes and dislikes; the Forest work being first and foremost at all times, and personal matters should under no circumstances be allowed to intervene and further, that a man who performs his duties in a good and thorough manner should be respected for the work he does, even though his personality is displeasing. No burden on account of personal likes and dislikes should be placed upon him. Much of this feeling will be removed by giving each ranger his district, but it is necessary for each of us to give this matter thought and strive to remove from the Forest workings that which is very displeasing and discouraging to us all.

WILSON: I don't know how other districts have done, but I think the Foresthill District has followed that plan during the last season. There has been four of us there during the last season. We divided the district into four units which left the District Ranger free to be in any part of the district. We followed that system all the way through. Each of the assistants had a portion of the district to look after and he was always placed where he could reach the district ranger by 'telephone in case anything serious came up. Each man handled his part of the district as a unit as best he could with the help given by the District Ranger and we found in our fire patrol work and special use business that we did very little back-tracking.

BABBITT: One point in favor of this system is that there is so much District Ranger work that one man ought to do it and it would take probably all his time during the fire season to handle the administrative part of his district. As it is now the office work just breaks into this other work whereas if he had a larger district the office or administrative part of the work would take all his time.

BIGELOW: I think in a district like that there should always be some one that can be gotten on the 'phone. When a fire is discovered it is reported almost always to the Supervisor and a lookout point in that district might notify us of a fire. We always want to keep in touch with a man all the time and my idea is that when the district ranger goes into the field he can call in a guard so that some one will always be on the 'phone. I think it is very necessary that some one in the district is always in touch with the district by 'phone.

KELLEY: Speaking of the size of districts, I believe that local conditions govern that entirely. I have had some experience in district management myself and in large districts unless the expenses are paid, a ranger would be in the hole at the end of the month. Then too there is a chance of too much back-tracking as brought out by Mr. Babbitt. It is my opinion that the smaller the district we have the more efficient we will be and the more will be accomplished.

WHITTUM: I agree with Mr. Kelley that if the districts were smaller a district ranger could better attend to business and have less expense.

HEADLEY: Probably some of you know that some of the Forests in the district are not managed the same as here. On some Forests there are just as many men as there are districts.

PRATT: Scientific management can never be a fact until we are ready for it. This Forest is pretty well covered with telephone lines and we have got a lot of good ranger stations. What might apply on the Eldorado may not apply here. If we put up with the work of new men we must train them. We want to pick out men that we can train along the proper lines so they can impart knowledge to men under them. How much easier it is for the man on the ground to issue instructions to a subordinate. He can take the matter up in detail which we in the office cannot do.

GALLAHER: I understand that the system that is used in having each ranger a separate unit is mainly on the

smaller Forests and on a Forest of this size it would put too much work on the Supervisors office. If you have larger districts you would have each ranger as a supervisor to handle the problems that come up. On a small Forest the Supervisor can easily handle this work in his office.

MERRILL: What Mr. Kelley has stated is very true. The size of the district depends very much on topographic conditions and while it seems that is going to make an endless amount of work for the supervisor, there is a lot of little matters that could be handled by a ranger competent to do the work and I believe the better plan is for each district ranger to divide his district into units and the general correspondence pass through his hands. On the east side of the mountains Mr. Babbitt's scheme would be ideal. On this side there should be men enough to have one stationed in nearly every town. If we had a man stationed in each town he could do the work without any additional expense. There is a tendency for the district ranger when he gets out to make the trip and jump back the same day and it seems to me that if the district ranger could have good headquarters and men enough he could do a great deal of work without additional expense. I heartily endorse Mr. Babbitt's plan.

SIVERTSON: We have tried our larger districts on this Forest, although we have not tried them out under this new management spoken of, but I know on the larger districts, in traveling around it has been necessary for us to stop at road houses where it eats into the salary pretty hard. In some parts of the Forest it will cost more than a day's salary to stay over night. There are some kinds of work that must be put up to the district ranger. Some men are not capable of doing the work - especially new men. You will find one that is and nine that are not. It seems to me that it would be an injustice to give a ranger a larger district to handle without increasing his salary. I have heard assistant rangers say, and very truthfully, that they don't want a district, that they get the same salary as the district ranger and do not have the expenses. If the districts were smaller every man would be getting the same salary, but if the districts are larger the district ranger should have more salary.

GALLAHER: If every ranger is going to be a separate unit how are we going to weld these units together?

BIGELOW: I believe that the district ranger in the field, on the ground right in touch with the men is better than men in the Supervisor's office in Nevada City. I think that men on the ground that feel the pulse of every man every day are necessary on a Forest as big as this. The Supervisor cannot hold the men like the man on the ground can.

WILSON: I think the district ranger will be better able to make intelligent reports. If a mining claim is to be examined you expect a report equal to a mining expert and the same is true with every other report -- a man must learn to know how to make his reports, which a new man cannot do on account of inexperience.

HELBIG: I think that if the assistant ranger had to look after all the correspondence that a district ranger has to do he would not be as efficient as he is now.

BABBITT: Under the plan I have suggested an assistant could go to a fire with the assurance that supplies and men would be sent by the District Ranger.

MERRILL: I agree with Mr. Babbitt. The District Ranger is familiar with his district and when a fire commences an assistant ranger knows that the district ranger will get there eventually and he works with a better heart and more energy.

HEADLEY: If we can get hold of the facts in the matter and can show from facts that it means more efficient management of the Forest to pay a man in his own district you can win the District Forester over to a plan of that kind. It is a question of more efficient management. We have not paid rangers expenses in their own districts because it was believed to be more efficient management.

Scientific management is an old old thing. It is just a new fangled term for an expression of the unrest and inquiries for a desire of improvement that is as old as the world itself. Its theory is to discover means to increase efficiency and economy. Scientific management is based on knowledge. The general theory of the application of what we know as Scientific Management to our business of National Forests is not as complicated, as difficult, as we might think it to be. The actual working out of Scientific Management and improving methods is nothing more or less than this. It can be illustrated. Our business is managing National Forests. These resources are owned by the public. We are employed to produce certain effects -- to produce certain results. The public needs to have the mature timber protected from fire. It needs to have mature timber so cut that it will reproduce itself. It is our business to get those results. To get these results costs the public certain things -- chiefly administration of the National Forests. Those results that we get for the public must be needed more than the money for administration of the business of the public. If it costs more to produce the results than the results are worth - that is poor management. If we produce more than the administration cost - that is good management.

We want to remember that every effort we put forth should have an object. We should not spend any time or money that has not some definite object in view. The only way we can know the relation of these things is by harmonizing our results and the cost of each line of effort. Then as these results are worth more to the public than the cost of getting these results our management is good management. If it happens to be the other way it is "BUM" management. Every time we can reduce the cost or produce results we have our management more valuable. Every time we can produce greater results with less cost, then we have made our management more valuable. When we know that we have found and adopted the one best way and can put that into operation, we have made our management more valuable.

PRATT: Why is it advisable to undertake costly silvical experiments without knowing absolutely what the net result will be.

HEADLEY: That is a business chance. It is up to us to estimate whether there is a good chance for the investment.

DUBOIS: At the present time the National Forests in California are producing only about 30 percent of their capacity.

BIGELOW: At the present time we are after results with the money we have. We want more results. We do not have half the results that we ought to have. We want more protective results. I don't believe we have 30 percent of the results we ought to have with the money we have.

KELLEY: It is obvious that conditions on the Tahoe will not fit the Eldorado and I suggest that we put it up to the force on each Forest and get the concensus of opinion as to whether a large or small district is best.

HEADLEY: I suggest that we assume that if it means more efficiency and more economy we put the question of larger districts; consolidation of districts; present districts and the system of a district for each man.

(It was voted by the Eldorado men that the present districts on that Forest are satisfactory. After considerable discussion by different members of the Tahoe Forest the question was dropped.)

Improvements

KELLEY: Improvements constructed now are more necessary for the efficient development of the Forest and their work in conjunction with fire plans, but in ranger district management I believe there is one thing a ranger should study out thoroughly and that is what improvement work should be done in his district. In making recommendations for permanent improvements, the prime issue is protection and the relation that the recommended improvement bears to it. We all know that our improvement appropriations are small and we must overlook a few little things and pay more attention to larger projects such as telephone lines, pastures, barns and houses, but I believe telephone lines are the most important and in recommending rights of way for telephones several things should be considered. We should consider how they will work in unison with our work in a National Forest and care should be taken not to duplicate them by running parallel lines too close together. Next in importance I believe is pastures. A man can pack enough from the outside but he cannot live very well without horse feed. Fire lines in some localities should be next considered. Barns I believe are next in importance, A man can get along with a tent but a horse must have shelter. Then after these improvements come houses. After we have the houses we may consider accessories to the house which will add to the comforts of living.

Heretofore, I regret to say, the feeling has been that we have no thought of those whatever. Sometimes we got money and did not know what to do with it. Bridges and Pastures were built where they were not needed as well as other minor improvements.

WILSON: It seems to me that telephones are the most important improvements that we have need for in our district, although the cabins and barns in the upper end of our district are more important than the pastures because up in that country the feed is plentiful. There is always plenty of feed and it gets cold so quick that a man must have a house. In my district cabins and barns are just as important as pastures.

BIGELOW: Is it better to build first class pole lines or tree lines.

WILSON: My opinion would be for the A-1 line. Of course we urgently need telephone lines and just as quick as we can get them. The very best line in that country runs up into the snow and is an A-1 line. The cost of maintaining this line is not 10 percent of the expense of maintaining a tree line. A pole line is more expensive at the start but less expensive in the long run.

JONES: I do not exactly agree with Mr. Wilson that a pole line is so much superior to a line strung on trees. The greatest danger to a pole line is from trees falling on the line and if a tree line is properly built by allowing plenty of slack between the ties I do not think we will have much trouble with the line breaking. Through the average mountain country four men will build about a mile of line in a day by stringing the wire on trees, but by building a pole line they would do well to build a half mile a day.

HEADLEY: Tree lines with lots of slack, split tree insulators, long tie wires are the rule in the district and considered the best class.

(Here the subject of induction from other lines paralleling the service line along roads was discussed)

JONES: Induction is caused by the current passing from the line to the ground. To obviate this where it is necessary to parallel or cross another line our line should be constructed as far above the other lines as possible.

BIGELOW: As long as we have ground wires we cannot get rid of induction. Metallic circuit cuts this out.

WHITTUM: We tried insulated wire in our district this summer. We put in three miles and laid it on the brush, carried it through the trees where we could and in places took it along the ground on tar weed or grass. We could not get it to work. The cattle in the first place would break it before we could get it constructed. We found the wire would separate and break after being put up. I think the wire was defective in the first place. I tested one coil before constructing the line and could not get the current through it.

Fire

DUBOIS: (Opening) Taken comparatively with last season, our fire record for this year was very good. The season last year began about May 10 (taking the district as a whole) and on September 19 we got the first general rain. This year it began about May 23 and closed on October 27, which is the last date of payment by the Fiscal Agent from the fire fund. This years' season was three weeks longer than last. Conditions during the seasons of 1910 and 1911 were about equal, this year being about three weeks longer and more inflammable material on the ground. Last year 553 fires started; This year there were 603 fires -- 50 more than last year.

We had four times as much money to spend this year as last and with four times as much money we had 18 times the protection.

I do not believe we should turn our attention to anything else until our Class A fires are reduced at least 80 percent. When we get a record of that sort we will consider it is our job to maintain it. We have a long ways to go before we get to that. Pretty nearly every Forest has a protective plan along the lines of the Tahoe & El Dorado. They don't work well enough. We have got to make our fire plans again and figure out the causes of each fire this year. If we can eliminate the causes so much the better. In view of the experience of this year we have got to make a plan to cover all causes. The main point that I want to make is the lesson that we must draw from each individual fire and a revision of the plan which permitted that individual fire.

PRATT: It appears to me that we must have two sets of plans. An ideal plan which may or may not be written down and a secondary plan which should be written down and used as a working plan for the season. There is a difference of opinion in this regard, but the main thing is that every district ranger should have an ideal plan in his head and get that down each year so that it will work. The secondary plan must contain as much as possible information that will work for the time being. We are going to revise the plans and find out where we fell down this year. We are going to dwell especially on cooperation. We believe that is one of the main factors in keeping down fires. There has been many plans of cooperation suggested, but I believe we have just begun in that direction. Another thing we want to consider is tool boxes. We should get tool boxes at strategic points on the forest. We should buy a lot of tools and place them where we can use them.

(Here followed a discussion by Mr. DuBois and Mr. Pratt of the ideal and secondary fire plans. Mr. DuBois in favor of ideal plans on maps and paper. Pratt in favor of secondary plans only on paper because there would be so much in the ideal plan that would not be used. Mr. DuBois believed that on account of the ideal plan containing data that could not be used at the present time on account of conditions, had an advantage over Mr. Pratt's scheme in that it would not have to be revised each year and would last, if properly gotten up, from five to ten years, whereas a secondary plan would only last one year.)

Mr. Headley here gave a brief resume of the San Bernardino fire and admonished us to beware of wind. He said "We must not forget that sometimes we will have a heavy wind at the same time we have a fire. One test of efficiency will

be to keep in mind the wind-danger. To meet that danger we must make every possible provision that fire will be detected and reached with every possible speed. I think we should approach as much as possible the fire protection practiced in the large cities".

WILSON: We had a fire plan and perhaps we were more favorably situated than some of the other districts to carry it out, but we followed it closely. There were some small details in the plans which we did not work out but as a rule it was very well and I think we are all satisfied that we had a better patrol system than we have ever had. I think we can truthfully say that as far as our district was concerned we made great progress by following that fire plan as laid out. Of course, we found several small changes that can be made for another year.

I consider the plan was 85 percent effective on our district. I had three men and divided the district into three units. Each man had his unit to look after without my having anything to do with it, and we figured that in case one man had an emergency I could go to his assistance, and leave the other two men to take care of the district. One man could always be gotten on the telephone. I believe we should have a lookout man on Duncan Peak.

WHITTUM: I followed the fire plans as near as possible and they worked out all right. There were one or two cases where it did not work out all right but I can see where this could be remedied. The only draw back was that we could have used one more man. I think that if we had not had a fire plan and gone at the matter haphazard we would have had much larger fires.

BERRIMAN: The fire plans worked out fine with the exception of being short one or two patrolmen. I might say it was almost perfect.

SUTTON: We followed the fire plans as much as possible. There was but one slip and that was because our lookout man was not on duty at night. This defect was remedied later in the season when we got a telephone line to the lookout point and stationed a man there both day and night. We followed the plans -- and very successfully.

MERRILL: We followed the fire plans compiled last winter almost exactly. Some of the minor details were omitted. The only criticism I have to make is that

they were not complete enough, and while we had a number of fires it was not the fault of the plans in any way. We need more men to reduce the cost of fires. I have had very good success with cooperation. In several instances when I was away parties sent crews to fight fires and rendered great assistance. Late in the season some of the people seemed to take advantage of the absence of the Forest officer. On October 19 I went to Washington. A fire started in the canyon. On investigations we found there were five different fires started. We had absolutely no proof to work on, but they were undoubtedly of incendiary origin. You can see by that where there are many cases where an ideal fire plan with money enough would greatly reduce the incendiarism. I believe it would be a good idea for some patrolmen to take a portable telephone with them. In this way it will not be necessary to ride ten miles to a telephone but he can connect the portable 'phone to any line anywhere.

BIGELOW: When a patrolman is going to leave his district we must plan for another patrolman covering that portion of the district. Our great mistake this year was that when one man was away his district was not covered and fires got away.

MR. WOODBURY here gave a short talk on timber sales. He said: "I think we have made considerable progress during the past year in getting our work down to a better business basis. In the past there has been a good deal of complaint on the part of the purchasers, and just complaint, for the reason that there have been too many men in charge of the sale. Now we have our procedure pretty well outlined. The supervisor designates a man in charge and that man is in absolute charge, and whatever he does the Service will stand for. Of Course, it is up to him what he does and he is responsible. I think this is one of the most progressive steps in timber sales during the year.

Up to this time the sales work in the district has not been very large, the district taken as a whole. We have now pending several large propositions, one of them involving about 800,000,000 board feet. The condition that we have to meet is that the larger part of the heavily timbered area of the state is situated anywhere from twelve to 20 miles from the railroad,

especially in the San Joaquin country. It is therefore very evident that if we are going to sell much timber in this district we must count on the purchasers putting in a good deal of money in transportation, and the purchasers are not willing to put in this amount of money without a contract larger than five years. We naturally had to consider the advisability of granting longer than five year contracts. In considering that we found that in order to derive the full value of the timber at each year of the period or during each five year period we had to re-adjust the stumpage rates, so we are working and negotiating with the several purchasers mentioned to devise a scheme for readjustment of the stumpage rates every five years.

After Mr. Woodbury's talk and a few brief unimportant discussions the meeting adjourned sine die on a motion of Chairman Jones that all in favor of adjournment should "beat it".

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During the meeting the following resolutions were prepared by the Resolution Committee and voted on by the rangers present.

RESOLVED, that there is no immediate need of marking range boundaries except in the case of range disputes or at the time of settlement of these disputes.

Carried by unanimous vote.

RESOLVED, that this meeting is in favor of trying an experiment in timber sales whereby the purchaser is given the option of piling the brush, or entering into a cooperative agreement with the Forest Service by which an additional estimated amount be deposited to be used by the Forest Service in piling brush.

Carried by unanimous vote.

RESOLVED, that this meeting of rangers endorses the acceptance of the position of Deputy Fish & Game Commissioner.

Motion defeated on vote of 14 in favor and 18 against.

RESOLVED, that we consider the present Fish & Game Laws unsatisfactory and that all possible pressure be brought to bear to secure the revision of the same and the better cooperation by the commission with the Forest Service.

Resolution carried by unanimous vote.

RESOLVED, that the present grazing fees are nominal and much less than for the same class of private land, and if any change be made the fee should be raised.

Resolution carried by vote of 24 in favor and 3 against.

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At 6:30 p.m. the entire force of Forest Officials present, 42 in number, gathered at a banquet in the National Exchange Hotel.

The following menu was served:

M E N U

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A Gibson

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Oysters on the Half Shell

*

Clear Chicken Consomme

*

Haut Sauterne — Fillet of Sole Fried
Sauce Tartar - Potato Marbles

*

Gherkins — Ripe Olives — Celery
Candies — Salted Nuts

*

Southdown Cutlets - English Cut
Philadelphia Rusk

*

RECTORS RUBY PUNCH

*

Claret — Young Turkey - Chestnut Stuffing
Giblet Sauce - Cranberry Jelly
Shoestrings - French Peas

*

Chicken Salad with Pimientos

*

Ambrosia Ice Cream - Assorted Cakes

*

Coffee

*

Cigars

"Woodman, spare that tree!
Touch not a single bough!
In youth it sheltered me,
And I'll protect it now."
- GEORGE P. MORRIS.

The dinner was finished about 9:30 p.m., with a toast by District Forester DuBois:

"Here's to the ideal ranger
The ideal forest
"And the ideal fire record."

After this toast a motion to adjourn to the parlor was proposed and the balance of the evening was spent in singing, Mr. Thompson officiating at the piano.

FINIS

Forest Officers Present at Rangers' Meeting

District Office:

Coert DuBois, District Forester, John H. Hatton, Roy Headley, T. D. Woodbury, Assistant District Foresters, and F. C. Thompson, District Fiscal Agent. A. K. Armstrong, Office of Products.

El Dorado National Forest:

Evan W. Kelley, Forest Supervisor, G. W. Lyons, Forest Assistant, L. E. Jones, L. P. Sutton, E. L. Scott, J. P. McMillan, R. C. M. Berriman, E. W. Fessel, A. W. Blair, Rangers.

Tahoe National Forest:

Richard L. P. Bigelow, Forest Supervisor; Merritt B. Pratt, Deputy Supervisor; W. H. Gallaher, Knower Mills, Forest Assistants; W. A. Merrill, Elmer P. Gleason, Geo. E. King, C. E. Whittum, J. H. Horwege, A. H. Walton, Woodford H. Babbitt, J. S. Sivertson, Evan A. Joy, Maurice S. Macy, F. J. Dooley, Howard Dodson, John A. McIntosh, William H. Helbig, A. R. Ivey, F. A. Wilson, V. C. Noddin, C. W. Sutcliffe, G. W. Campbell, Rangers; B. F. Howe, A. S. Campbell, L. L. Myers, Forest Guards, C. O. LaRue, Forest Clerk.

Mono National Forest:

W. J. Clark, Assistant Forest Ranger.

T H E T A H O E

(A Quarterly Publication)

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VOLUME I. APRIL 1912 NUMBER 5.

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D I R E C T O R Y

Headquarters

Richard L.P. Bigelow	Forest Supervisor	Nevada City
Merritt B. Pratt	Deputy Supervisor	Nevada City
Charles O. LaRue	Forest Clerk	Nevada City
Gertrude Emmerich	Stenographer	Nevada City
Knower Mills	Forest Assistant	Nevada City
Vivian C. Noddin	Assistant Ranger	Nevada City
William H. Helbig	Assistant Ranger	Nevada City

Districts

Challenge District:		
Elmer P. Gleason	District Ranger	Challenge
Downieville District:		
George E. King	District Ranger	Goodyears Bar
Camptonville District:		
Charles E. Whittum	District Ranger	Camptonville
Sierra City District:		
Aaron H. Walton	District Ranger	Sierra City
Sierraville-Truckee District:		
Woodford H. Babbitt	District Ranger	Sierraville
Evan A. Joy	Assistant Ranger	Sierraville
Nevada City District:		
William A. Merrill	District Ranger	Nevada City
Albert R. Ivey	Assistant Ranger	Nevada City
John A. McIntosh	Assistant Ranger	Emigrant Gap
Jordan H. Horwege	Assistant Ranger	No. Bloomfield
Foresthill District:		
Frank A. Wilson	District Ranger	Foresthill
Charles W. Sutcliffe	Assistant Ranger	Michigan Bluff

E D I T O R I A L S

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Consolidation of Districts.

To increase the efficiency of the administration of this Forest it has been decided to consolidate some of the smaller Districts. This plan was discussed to some extent at the Rangers' Meeting.

This year the Truckee and Sierraville Districts will be under the charge of Ranger Babbitt, with headquarters at Sierraville, and the Emigrant Gap, Bloomfield, and Nevada City Districts will be under the charge of Ranger Merrill with headquarters at Nevada City. The Brandy City - Scales country has been taken away from the Downieville and added to the Camptonville District, the enlarged District to be under the charge of Assistant Ranger Whittum. The Foresthill District is already a large one and requires no change.

Along this same policy it is proposed eventually to consolidate the Sierra City and Downieville Districts with headquarters at Downieville, but for the present no change will be made.

The larger districts have both protective and administrative advantages over the smaller districts. A most important advantage consists in having one man during the fire season in each unit of the Forest, knowing the whereabouts of every man in the District at any time during the day. He is thus in a position, in emergencies, to back up each Assistant Ranger and Guard under him. In a small District organization this course is not possible since inquiry would have to be made through the Supervisor's office, and on a Forest of this size it would require a night telephone operator to find out the proposed movements of each Ranger for the next day, and when a fire call came, time would be wasted in locating men.

The small District system requires a great deal of correspondence with the Supervisor's office, which is unnecessary under the large District organization.

New men can be taught and broken into the work

much more quickly by being under the guidance of an experienced Ranger. In the one-man District it is often necessary to turn a new man loose to teach himself, and he makes many a break which could be avoided if he were under the direct guidance of an experienced man.

It is thought that when our telephone system is complete, the efficiency of our present force can be almost doubled under the large district organization, since the District Ranger will then be able to be in close touch with every man under him and be in a better position to guide his force, and better team work will result.

Rangers' Monthly Plans.

Recent orders have been issued to District Rangers to submit monthly plans for the proposed work to be carried on in their Districts during the coming month. Each Assistant Ranger is also instructed to submit to the District Ranger his plans of work.

This scheme is along the general plan policy of the Forest Service. It is hoped that it will systematize the work in the field and that, by thinking ahead, each officer will improve his "thinker" and the standard of our work will be raised perceptibly. No doubt our plans for the months during the fire season will be knocked all to pieces by some big fires, but all we will have to do in such cases is to plan over again.

The idea is to have some definite plan to go by each month and see how closely we can follow it. The tendency will be to make each officer review the needs of his unit of the Forest each month.

It will be interesting to see how closely we can plan ahead during the coming field season.

Cost vs. Value Received

Considerable discussion took place at the Supervisors' Meeting regarding the value of the Forest publication, and a vote taken on the matter showed that the majority of Supervisors in the District were not in favor of them, but were in favor of a District Publication. Since most of the dissenting opinions, however, were from Forests where no news letters are issued, the vote did not carry the weight it should with the Supervisors issuing publications. The chief objection made by the dissenters was that the publication cost more than it was worth to the men in the field.

A definite opinion from each Forest officer on this Forest would be appreciated. Please inform the Editorial Staff on receipt of this number whether you would be willing to contribute 25¢ per quarter to defray the expense of issuing the publication rather than see it dropped. As for stenciling and mimeographing, our clerks have offered to do this work out of hours if they find it interferes too much with their routine work.

The Board of Editors have found that the work they do in getting out The Tahoe forms an interesting and pleasant variety to their duties.

Selection of Planting Areas.

It is interesting to note the progress that planting and seeding has made on this District . Indifference on the subject has been superceded by active interest. We feel very proud, in fact, of our successful experiment in establishing the Big Trees by seeding at Rock Creek, 34 miles northwest of the Last Chance grove, a member of which is shown on the cover of this issue.

The District Office has just informed us that we will be required to plant this year 7,000 Big Tree, 5,000 Sugar Pine, and 15,000 Yellow Pine seedlings, and sow 65 pounds of Sugar Pine, 25 pounds of Yellow Pine, and 20 pounds of Jeffrey Pine seed. We have been given ample notice and now it is up to every Ranger to be on the lookout in his District for favorable sites. When you find one you think is adapted to any of these species, let us know about it at the office. This should lead to the selection of some excellent areas.

C O N T R I B U T E D A R T I C L E S

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Forest Officers' Attitude on Mining Claims

By

W. A. Merrill

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In National Forest administrative work Claims occupy a prominent place and on some of the Forests, particularly on the Tahoe, the major portion of this work has to do with mineral claims. Perhaps there is no branch of the Service where the method of procedure is so little understood by the public or those directly interested in the mining industry.

Almost without exception people desirous of securing patents to their locations within a National Forest are of the opinion that, since the land has been withdrawn from entry and placed under the jurisdiction of the Department of Agriculture, new laws have been enacted and that the miner has been hedged about with restrictions calculated to prevent him from securing title to his mining property.

The general cry of miners and prospectors is apt to be that, since the locality where they live has been put in the National Forest and new laws passed, the miner stands a mighty poor chance. It is in vain that the Forest Officer explains that no new laws exist and a prospector or miner has all the rights he ever possessed, and the only difference there can possibly be is the enforcement of the law as it existed heretofore.

One of the greatest difficulties that a Forest officer has to contend with is the seeming impossibility of the average individual to correctly understand and repeat facts as they are told.

This has been brought to my notice many times. For instance, after painstakingly explaining to an inquirer his priveleges until I was satisfied that it was as clear as

day in his mind, I have known him the same day, to repeat the information he had received with the meaning exactly reversed.

Another disadvantage which the Forest Officer labors under is that it is only occasionally that he has an opportunity to correct the false impressions that exist. This is due to the fact that the officer hears but little of the gossip about the Service. Occasionally he will be approached by a local resident, sometimes in this wise: "Well, I see you have taken Smith's claim away from him", reference being made to some contested claim where patent has been denied. When the facts are explained to him why it was impossible for the claim to be patented under the law, he will agree almost invariably and say "That is not the way it was told to me", and "I was under the impression that an injustice had been done".

The fact that the feeling among mining men spoken of still exists is largely due to the fact that many of the attorneys who are in the business of securing patents now find that it is only possible to obtain patent when all the conditions prescribed by the law are complied with. Now they find they are barred from the practice of many of the expedients that they were in the habit of resorting to in order to secure title. Because of the so-called inconveniences which they encounter, the Forest Service is blamed for hampering business and impeding progress in the Mining industry.

In making this statement the point which it is desired to emphasize is this, that Forest officers should lose no opportunity to explain the mineral laws and the connection which the Forest Service has in the patenting of mines in National Forests.

In short, show the people that the Service stands for anything that will develop the resources of the country for the people; that we are here to prevent rather than prosecute trespass, and to benefit the people with any information that we have at our disposal. Show them that all stands are taken in conformity with law and justice to all interested. Show them that personal prejudices and opinions count for naught, and lose no opportunity to correct false statements or impressions of the policy of the Government. Remember that little good and few friends result to the Service from useless arguments.

These conditions apply particularly to the Tahoe where probably 20% of the Government land is held by mineral locations and where mining is the most prominent industry. Every effort, therefore, should be made to convince the populace that the Forest Service is a friend of any movement that will tend to increase the development of that industry.

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Facing the Problem of Rangers' Education.

By

V. C. Noddin.

When Winter arrives with the consequent inclement weather, which does away with the fire danger, the Ranger's thoughts naturally turn toward the subject "D-Tahoe-Education". This was especially true last Fall in view of the then approaching examinations on the Forest Service Manuals. In this connection it might be stated that several universities, cooperating with the Forest Service, offered a Rangers' Course on the summer school plan during the past Winter, covering every conceivable subject with which a Ranger comes in contact, and with the idea of fitting him for advancement along Forestry lines. This course, to be sure, is impossible for all except those within a reasonable distance of the universities on account of the expense.

It goes to show, however, that the present trend of the Forest Service, considered by some as a routine branch of the Government, is toward a higher plane than is generally supposed. Brother Rangers, we have this situation to face. The Service is becoming more technicalized; as it must become if the best management is to be attained, and we must prepare to meet the changing conditions by study, and constant study at that.

As the subject of Forestry becomes better understood, the technical side becomes more apparent and must be comprehended by those engaged in the work. When we consider the large numbers studying Forestry in our colleges

today, it means that to hold his own, the Ranger must study Forestry himself as thoroughly as possible, not as a "high-brow", but as a practical forester.

That this is necessary is very apparent. The larger number of Forestry students who leave college every year intend to enter the Government service, both on account of the more varied range of experience as well as the increased opportunities. Of this number there will be a portion who, failing to pass the Forest Assistant's examination and not being able to pursue further study, must therefore enter a less technical position. There were last year ten men who passed the Forest Assistant's examination who were unassigned and this number will increase each year. These men must also seek the lower positions until there are positions open for them. The result is that with the technical side advancing in every branch of the operation of the Service, and with this large body of available material to pick from, the work of the Ranger and the examinations for the position will necessarily become more technical. To meet the advancing competition of the new blood, the Ranger must post himself on his work or become a back number.

The day has passed when all that was necessary to pass the Rangers' Examination was to know how to pack or ride a horse, cut down a tree, wield a pick and shovel on a trail or fire line, and to wear a No. 4 hat and a No. 44 shirt. This work will always have to be done, but there will be more and more of it done each year by the short term men while the Ranger will be busying himself more with the details of supervision, timber studies, planting, insect infestation experiments, and the various regulations.

Of course we all know that the Ranger has the advantage over the college bred man in his present work for he knows how to ride a horse, to pack, to get to a fire and put it out in the most economical manner, and to deal with all classes of people with whom he may come in contact. This is the result of long experience, but we must not fool ourselves into believing that the college bred man, even if he generally is over-educated technically, can not also learn to meet the same problems. It may take him a number of years but with experience under a practical, older man will come wisdom, the older man teaching, the younger learning.

And thus, Brother Rangers, to prepare ourselves to meet this crisis and to hold our own against the new blood

being infused into the veins of the Forest Service, we must study, not only the prescribed courses but also such books as we can, especially along these lines of work which may interest us.

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The North Grove of Big Trees

By

Frank A. Wilson

The North Grove is located fourteen miles from Foresthill, Placer County, California, as the crow flies in the direction of the rising sun. Here in a little cove on the headwaters of Mosquito Creek stands this little grove. It is not remarkable for its size or number of trees, but its location has made it famous. It might well have been called the "Hermit Grove", because it would take several days hard riding to reach its nearest neighbor.

Here it has stood for over twenty centuries on the Big Oak Divide, guarded by the deep gorges of the North and Middle Forks of the American River. On all sides it is surrounded by a dense mixed stand of Douglas and White Fir, Yellow and Sugar Pine, and Incense Cedar. Here on a rolling plateau can be seen the original forest as it has stood for centuries. Even the hardy shake makers have passed on to more accessible timber and left this unscarred.

There are four small trees, ranging from twenty to forty-five inches, and two large ones, measuring one hundred eight and one hundred twenty inches in diameter, standing. There are two large trees down, one measuring ten and the other eighteen feet in diameter at the base. The largest standing tree has attained a height of two hundred eighty feet and is ten feet in diameter above the bulge. On one side there is an ancient burn where visitors have cut their initials and dates, while here and there a letter cut with a scribe proclaims the fact that surveyor has seen them, although they still stand upon unsurveyed ground.

The elevation here is a little over 5,100 feet

and the heavy snow fall of past seasons has trimmed off the limbs of the larger trees. The smaller trees seem to be very thrifty and are unscarred except by the marks of the wandering bear that has sliced the soft bark with his claws. The height of these marks will make one take an involuntary glance over his shoulder to assure himself that the bear has left that vicinity.

At various times prospectors have located claims in this vicinity and have claimed these trees, but the claims have been abandoned and the trees are still on public land in the Tahoe National Forest. Owing to the dense ground cover there is very little, if any, reproduction. One old prospector says that he has looked for seedlings since 1850 and only succeeded in getting two, which died when transplanted. The fallen trees are there today in apparently the same condition as they were when found by the earliest pioneers. It is hard to realize that some of these trees were large before Columbus discovered America and are still alive, but any botanist will assure us that it is a fact.

The large size of the trees in the surrounding Forest makes the Big Trees unnoticeable and a person could pass within a few rods of them without knowing it, unless he was trying to find them and know what to look for. It is not uncommon to find Sugar and Yellow Pine in this vicinity with diameters from six to ten feet and attaining a height of two hundred feet.

Here the deer roam undisturbed by the sound of a railroad whistle or the honk of an automobile. The lone hunter is scolded by the squirrels, without any fear of his gun, because he considers them too small to shoot at and they feel perfectly safe as they scurry up the long smooth boles of trees that contain from six to ten thousand feet of clear lumber.

Not being a poet I cannot describe their majestic grandeur nor write an ode to the forest primeval, but when riding beneath their spreading branches I have often thought that it is within the power of any man to plant a grove of these trees which might stand as a monument of his industry for centuries to come. Other men have indelibly written their names in the hearts of men by various deeds of valor, but it remains for us who are consecrated to the cause of Conservation to protect and preserve for posterity these living relics of a by-one period, and spread their progeny over a vastly greater area that will some day redound to our credit

and keep our deeds from passing into the oblivion of time. Let us, therefore, join hands with a firm resolution to give to the historian of the future a cause for gratitude towards the first desciples of CONSERVATION.

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Method of Getting Rid of Old Snags

By

W. H. Babbitt

There has been considerable discussion relative to falling old snags that constitute a fire menace on many of our sale areas, as well as on the Forest at large. That it is most desirable to remove these snags is beyond question, but the method and the relation of cost to the amount of benefit derived, seems to be the debatable point. Powder and dynamite as well as the axe and saw have been tried, but all leave much to be desired, especially in the older snags, where loose punkey shells are found on solid pitch hearts or vice versa, where it seems to require all of the above methods at once and still lacks something to bring snag falling into the same class financially, as the falling of sound timber.

On a recent trip through the snow belt, Charles Bonta and I struck ideal conditions under which to remove many of these bad snags and stumps. The weather had been very cold and windy for some weeks and we found the snags quite dry in spite of the snow. We gave considerable attention to burning dangerous snags nearest the road and found that a scrap of oil soaked rag, placed in a crevice or doty spot, would ignite them and we fired quite a number, all of which burned down and some were entirely consumed. It occurred to us that good work could be done along this line, when other field work is not pressing and that large results could be obtained at a very low cost.

On the H. O. Nichols sale area all of the snags were burned down and largely consumed, shortly after the first fall of snow, but only with much bodily discomfort on account of the wet snow and and drip from the trees. It was found that the snags were not very wet, which was considerable of a surprise. Conditions are found much more favorable when the snow has hardened in the early Spring. Travel is then easy

and the timber is quite dry even on the outside, despite the snow, the moisture from which seems to penetrate very little during cold weather. The first Fall storms are apt to be sleety if not straight rain and it is hard to get the fire to take hold at such times.

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Dog Teams for Winter Work

By

W. H. Babbitt

Now that the Forest Service owns three power launches and the prospects of securing automobiles for fire fighting purposes are brightening, it seems to be a favorable time to bring to attention a very different means of transportation that should be of great value to the Service at a time and place when other means are entirely abandoned. The place is the snow belt during the Winter and the means of transportation, the dog team.

It is usually accepted that with the first snows the field work practically ceases except in a few favorable situations, until the snow if off in the Spring, when all of the work comes with a rush and many things must be done in haste with often little care. By the use of dog teams to transport supplies, all of the telephone lines could be repaired during March and April and short lines could also be constructed under very favorable circumstances. One gets an idea of the snow conditions and has no underbrush to contend with. It will be found that cutting obstructing limbs is much easier from the snow or from a short ladder than from a long ladder.

There will be little inclination towards prolonging the work unduly in the crisp mountain air. Activity is essential to bodily comfort and the work goes forward rapidly as against that dragging feeling of the first warm days of Spring. Other lines of work can be performed if camps can be established at convenient points in the snow country. Cruising timber has been found successful and survey lines were traced after the heavy snows of the Winter 1910-11, with great success.

In Alaska the Winter is the season for travel and the conditions are similar in the Sierraville-Truckee District.

Five sleigh dogs and two men can transport five hundred pounds practically anywhere on this District. Seventy-five pounds of dry food would last five dogs two weeks. To supply a large camp, nine dogs is the ideal team. The dog food should be prepared during the summer, when jerkey can be made from antiquated bulls and horses, a cheap and plentiful supply. If this is ground and baked in corn-meal bread until quite free from moisture, it will form the entire supply for the team. The sleigh dogs live on less than a pound of dried food per day, so that the weight is but a small proportion of the load they can haul. This is the great advantage of sleigh dogs over other animals if far from the base of supplies, when provisions must be carried for both team and drivers.

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S I L V I C U L T U R E

Township maps on the scale of two inches to the mile have been made for six townships from the section maps obtained by the reconnaissance party in the field last Summer. Work is progressing on a large map of the Truckee Block on the scale of one inch to the mile.

Winter reconnaissance commenced in the Challenge District on December 9 and was carried on by Lumberman Elliott and Assistant Ranger Gleason until March 5, when Mr. Elliott left to take up some work on the Sierra. Forest Assistant Mills worked with the party for a week in December and is now with Assistant Ranger Gleason completing the work on the block of Forest land near Forbestown.

The Tahoe is one of the eight Forests in the District where reconnaissance work will be concentrated this season. The party will consist of a Forest Assistant, 7 Field (Student) Assistants and a Cook. It is planned to

cover the Red Fir belt on the main divide west of Sierraville, from the north boundary of the Forest south to the drainage basin of the Little Truckee River.

This timber will soon be made accessible by the railroad which the Verdi Lumber Company will construct to Sierraville and will be an attractive pulpwood proposition. It is expected that the estimates and maps secured will furnish definite data for a future sale.

In February Forest Assistants Gallaher and Mills commenced work on a study of second growth Yellow Pine for the purpose of ascertaining the volume of stands of different ages and predicting future growth. The rapid growth and high yield of Yellow Pine timber on cut-over areas about Nevada City indicate that "woodlot" management here may be as profitable as in the second growth White Pine stands of the East. It is planned to obtain definite data on the best methods of treating these stands and the yield to be expected.

In the planting work which was completed last Fall and this Winter about 90 acres were sown with Yellow and Jeffrey Pine seed, 40 acres were sown with Sugar Pine, and 35 acres were planted with two year old Yellow Pine seedlings. The Sugar Pine seed was sown near Forks House in the Foresthill District; twenty acres near Truckee were sown with Jeffrey Pine; and the remainder of the work, with the exception of some small experiments was done at Rock Creek. Corn planters were tried experimentally in seeding Yellow Pine and were found to increase the speed of the work considerably on favorable sites.

About two acres were sown with Western White Pine seed near the Horse Shoe Bend Camp of the Crown Columbia Paper Company at an elevation of 7,000 feet. As an experiment about one acre in a swampy corner along Rock Creek was sown with the Bald Cypress of the South.

Some of the lessons we have learned from our seeding experiments up to the present time might be summarized as follows: (1) Seed spots are successful only in lo-

calities where there is good natural reproduction of the species planted. Neither Yellow Pine nor Sugar Pine will thrive outside of the altitudinal zones in which they naturally belong. (2) Late Winter or Spring seeding is a failure. Seeds should be set in the early Fall in order to obtain the advantage of nearly the entire annual precipitation. (3) Seeding is more successful on areas above 4,000 feet than at lower altitudes, for the reason that the snow at the higher altitudes goes off later and the dry season is correspondingly shorter. (4) In unfavorable regions planting should be more successful than seeding.

The first steps have been taken in the construction of cordwood volume tables for Red Fir. Forest Assistant Gallaher worked up a table for the species, giving the merchantable volume in cubic feet on the basis of diameter and height. To complete the tables it is necessary to know exactly how many cubic feet of solid wood there are in a cord of split Red Fir wood. It is planned this Spring to obtain this data by means of a Xylometer, a small tank filled with water in which sticks of cordwood can be immersed. Measurement of the water displaced gives the cubic volume of the stick. The Xylometer has already been constructed and it is planned to measure about 25 cords of Red Fir wood this Spring at the mill of the Crown Columbia Paper Company at Floriston, California.

The volume tables when completed will be of very great value in connection with the pulpwood sales on this Forest, and especially in working up the estimates obtained by the reconnaissance crew this season in the Red Fir belt.

The largest timber sale ever made on this Forest has been concluded. The timber in Lemmon Canyon for which the Verdi Lumber Company applied has been advertised and sold to that Company. The amount is estimated to be 52,700,000 board feet of Yellow Pine, 18,100,000 board feet of White Fir, 2,100,000 board feet of Sugar Pine, and 20,000 cords of Yellow Pine cordwood and 360,000 Cedar posts.

The contract allows 12 years from March 1, 1913 for removal of the timber. In this sale the Forest Service is using a new method of determining stumpage rates. Up to this time few sales for long periods have been made, because of the difficulty of foretelling stumpage rates which would

be fair to the Government and to the purchaser throughout the life of the contract. Under the new method, stumpage prices are fixed for only the first five years and will then be revised to conform with changes in the values of lumber. If lumber prices, averaged for the year preceding April 1, 1918 do not show an increase of $2.00 per thousand feet, the stumpage price will not be changed. If the increase is greater than $2.00, three-fourths of the increase over that amount may be added to the stumpage rate. The rates for the first five years are $2.50 per M for White Fir, two cents per post for Cedar posts, and 10 cents per cord for cordwood.

In order to log the Government land and their own holdings, which are closely intermingled, the Company will extend their logging railroad 20 miles. This railroad, which will be a common carrier, will be a decided benefit to Sierra Valley.

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CONCERNING "HOUN'-DAWGS"

Every time I come to town
The boys keep a-kickin' my dawg aroun';
Makes no difference if he is a houn';
They got a-quit kickin' my dawg aroun'.

From Pike County Classics.

The wail of the Missouri hound has reached Nevada City. The much kicked mongrel has rubbed noses here with several dawgs which have been prowling around the Tahoe Forest.

A Forest Service houn' that is much abused goes by the name of Efficiency. Knockers have sorely beat him, but his tail still wags with undiminished fervor and he is still on the trail of Scientific Management in spite of his harsh treatment. His spirit is not cowed because he knows he is on a fresh scent and the quarry is in sight. This dawg, although at present considerably run down, will pick up since he has good breeding. He already has a good home on the Mono and Inyo Forests and his progeny will gradually disseminate throughout the District.

Another dawg that wears a woe-begone expression is named Property. He belongs more or less to us all, but is

chiefly attached to the Supervisor. When treated right he has an affectionate disposition, but when abused he is a veritable terror. Property is on good terms with this Forest through the gentle ministrations of the Clerk, although it is understood that in certain localities he must be muzzled.

A very ferocious dawg comes up this way by the name of Accounts. This dawg will not stand harsh treatment, which is only natural since Forest officers, as a rule, are prejudiced against his looks. This dawg, however, is very useful on account of his extreme watchfulness and because of his protective value, is treated with more and more consideration all the time.

This trio of houn's, Efficiency, Property, and Accounts, are really good dawgs when once they are gotten acquainted with, even if some of us may be from Missouri and inclined to take a furtive kick at them when they don't do things to suit us.

And now, lest we forget, there comes a mournful, subdued wail from our houn' dawg Polyticks, down in the basement anchored to an iron girder with a two-inch cable. This stringent action is deemed necessary by his masters, of whom there are many, to curb his activity which bodes fair to disturb their tranquility at a time when their nerves need to be especially settled. Woe be to Polyticks if he gets loose! He will straightway be apprehended and thrown into the pound by one of the many dog-catchers in these parts where he will, doubtless, speedily meet his fate.

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O P E R A T I O N

Letters asking cooperation from the different private interests throughout the Forest, are being sent out from the office. Favorable replies have been received from the Southern Pacific Railroad Company, Pacific Gas & Electric Company, Sierra Nevada Wood & Lumber Company, Verdi Lumber Company, Read Lumber Company, Boca Mill Company, and Sargent Estate.

It would be appreciated if Forest Officers would send in names of private interests in their Districts which should cooperate with us, together with their ideas of the

best form of cooperation to be carried out.

The secondary fire working plan for the coming season has been completed and is now going the round of the districts. The ideal plans and maps submitted by District Rangers were followed as closely as possible in making this plan, which should work, provided the District Officer furnishes enough lubricator.

A map on the scale of one inch to the mile showing the boundary of the Forest up to date was made for us in the District Office. On it we have placed existing and proposed improvements, and private telephone lines. Its forms our first real record of data of this character and will be extensively used as a reference map. It is thought that District Rangers will find a map of their districts along similar lines of much value. A map of this character was drawn by Ranger Wilson showing the correct location of the roads, trails, mines, and ranches in his District, the data used being secured largely from local maps to which he had access. The District Office had 50 black and white prints made of it for use in this office and the Foresthill District.

Forest Clerk La Rue has been designated as Custodian of the non-ex endable Government property on this Forest and will soon send out for receipts for such property held by the different Forest officers.

This change will mean that the Supervisor will now be able to condemn broken and worn-out property, and any officer charged with such property should take the matter up with him when he is next in his District.

Under the new procedure all property in the field will be charged to the District Rangers who will be furnished with a set of card records (which they will be expected to keep up to date) similar to those used in the Supervisor's office. They will then be required to hold each of their assistants directly responsible for what property they have in their possession.

This change in procedure will eliminate many proper-

ty transfers in the Supervisor's office, since in the past it has been necessary to transfer property from "Stock" or from the District Ranger to short term men when they are put on at the opening of the fire season, and then re-transfer it back to stock when the man quits or is furloughed at the close of the season. Such transfers were still further complicated by transferred part of the property to the District Ranger and the other part to "Stock", and each transfer means an entry on two or three cards for each article.

Another point which came up this Winter was where a District Ranger would allow an Assistant Ranger to keep some of his property in his possession without taking a receipt therefor. When this occurred, a mix-up invariably resulted, especially when the Assistant Ranger on leaving turned property into this office charged to the District Ranger.

It is expected that each District Ranger will keep a supply of stationery and forms on hand sufficient to supply, as far as practicable, the needs of all his Assistants.

It is believed this will be the most expeditious method since the District Ranger will be in daily communication with his Assistants and can fill the wants of the latter on short notice without the delay incidental to mailing a requisition to this office.

In other words, it will mean keeping seven men supplied from this office, instead of forty as during the field season.

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H E A D Q U A R T E R S N E W S

J. B. Sivertson left on December 15 for Three Rivers, California, to engage in business. He was one of the old timers on this Forest, having been here since 1906.

J. Alfred Mitchell has fulfilled a prophecy made concerning him by various sooth-sayers on this Forest. He has taken unto himself a wife. May joy be with him.

L. A. Barrett, connected with the office of Lands, and Swift Berry of the office of Silviculture, will visit this Forest the coming summer.

R. W. Taylor, now Forest Assistant on the Sevier National Forest in Utah has been assigned to this Forest and will report for duty on April 16. He has had considerable experience and comes well recommended.

Miss Gertrude Emmerich arrived March 1 from Los Angeles to fill the position of stenographer and typewriter in this office. Mrs. LaRue, who has been capably doing this work, was obliged to give it up on account of her household duties.

A. R. Ivey was laid up for two weeks or more with la grippe and lumbago. He has celebrated his recovery by wooing the muse, his efforts appearing in this issue.

Deputy Supervisor Pratt and family returned January 16 from a visit with relatives in Illinois and Kansas. Pratt opines that he prefers forest fires to 25 degrees below zero weather.

V. C. Hoddin was incapacitated for about ten days the first part of February with the mumps. A letter from "Bill" Gallaher in the Santa Barbara hospital shortly after his departure informed us that he was having a "swell" time there with one of the nurses.

J. H. Horwege and Evan Joy were recently transferred to the Statutory Roll. W. A. Merrill was promoted to the position left vacant through J. E. Sivertson's departure and his former position transferred to the Plumas Forest.

Forest Assistant Gallaher left on March 1 for a year's study of Forestry conditions in other countries. While on this Forest he made some valuable original investigations, his studies on "growth" being especially good. The editors of the Tahoe look forward to contributions from him on his impression of forest management abroad.

Word has been received that R. C. Woodburn who was in charge of the Truckee District last season, will not return. He has been engaged recently by the State Forester in collecting data for the stand of timber on State lands. Assistant Ranger Dodson also states that he does not expect

to continue his work in the Forest Service.

Supervisor Bigelow returned from his detail at the District Office on February 22. He was very enthusiastic over the Supervisors' Meeting held in January and brought back some leaven with which to raise the effiency of the Forest. The minutes of the meeting are being worked up and will soon be ready for distribution.

Assistant Ranger C. W. Sutcliffe, who is now on furlough, sent in a very interesting account of the trapping he has been doing this Winter near his home at Michigan Bluff. We regret very much that the account came too late to permit its being given in full. Mr. Sutcliffe states that he has trapped to date one bear, four foxes, two lynx cats, two skunks, and seven fishers; his three months' work clearing him $165. The fishers had the most valuable skins, the price received ranging from $13 to $28. In attempting to capture one of these animals alive, Mr. Sutcliffe was bitten through the hand and concluded a club was more satisfactory. The bear hide brought $5, and the other skins from $1.75 to $2.25 besides the dollar bounty paid by the county. There were thirty-two traps set in all, it taking about four hours to make the rounds.

Since our last issue, we are in receipt of the following publications, all of which we have read with interest:

Sierra Ranger	Beaverhead Ranger
Stanislaus Review	Mono Ranger
Lassen Magazine	Deerlodge Ranger
Trinity Forester	Modoc Review
ElDorado Exchange	Nez Perce Newspiece

The rangers on the Stanislaus are to be especially commended on their number.

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D I S T R I C T N E W S

The telephone line from Nevada City to Bloomfield has been completed. Assistant Rangers McIntosh, Joy, Helbig, and Walton have demonstrated their ability as construction experts by putting in a line that will be a credit to the For-

est. An instrument will shortly be installed at the Kirkham Ranch to provide for protection of the plantation and seed area near that place.

A two-strand barbed wire fence is being built around a portion of the Yellow Pine plantation at Rock Creek in order to keep stock from trampling the young trees. Whether the fencing is worth while will later be determined by a comparison with the unfenced part of the plantation.

Two applications for Oak cordwood in the vicinity of Nevada City have been recently received, one for 1200 cords and one for 900 cords. The applicants are Sherman W. Marsh and J. Zenacco of Nevada City.

Assistant Ranger Hornegg recently moved with his family to the Bloomfield Ranger Station from Camptonville.

The Serpentine Ranger Station field has been broken up and seeded. This field, together with that at the Rams Horn Station should furnish abundant hay and pasture this season for the Downieville District.

The Foresthill District enjoyed a quiet and uneventful Winter, with the exception of a few hours during the month of February when there were two forest fires driven by a heavy north wind, both burning at the same time.

Assistant Rangers George and William Campbell have spent their time while on furlough driving a tunnel near Michigan Bluff to tap the famous Blue Lead Channel.

During the month of March, Supervisor Bigelow made a short trip to the Foresthill District on official business.

Eighty acres of brush were burned on the California Lumber Company's sale area by Ranger Babbitt. The Corey Station area of 40 acres, the Nichol's sale area of about the same area, and the small sale and free use area near Sierraville, were also cleaned up.

One hundred pounds of timothy, red top and clover seed has been sown on the Sierraville Ranger Station pasture. There was an abundance of water on the tract last year, but the crop was largely weeds and undesirable grasses.

The records show that forty-six inches of snow has fallen in the Sierra Valley during the past Winter and the Valley is now entirely clear, with the snow at the Yuba Gap Summit but four feet deep. The records of the preceeding season show that eleven feet of snow fell at Sierraville and on March 17 there was four feet of solid snow on the level. At Yuba Gap Summit, on the same date, there was fifteen feet.

Charles Benta, Forest Guard last Summer, reports that he and his brother Frank have killed twenty coyotes to date in Sierra Valley. The animals were smaller than the average and the hides were poor. It is believed that the coyotes that have infested the Valley this Winter worked in from Nevada and replaced the large numbers that were trapped and shot last Winter.

Ranger King of the Downieville District reports it has been a very dry Winter in that section and every indication points to a scarcity of water this Summer. The gauge height now stands at low water mark for last summer. The oldest settlers claim the river is lower this year at this season than at any time they can recollect.

There have been a number of small cordwood sales in the Downieville District this Winter, as well as considerable free use. The open Winter has given the local residents the opportunity of cutting their wood for next Winter.

THE RANGER ON THE TAHOE

By
Albert R. Ivey

The Ranger on the Tahoe, in the Winter has a snap.
He has nothing to do but work 'Till hiking time comes back,
When the season's fires are over, full of joy he comes to town.
He's maybe got the notion that he's going to lay around,
But the Boss, too, has a "Notion" and it's mixed with plenty tact,
For he grips our hands with pleasure; says "I'm glad to see you back.
We've had a dandy season, and it's time to take a rest,
We're going to plant some seedlings — fifteen thousand at the best.

The job will soon be finished, so just to fill out time,
We'll sow two hundred acres with the seed of Jeffrey Pine.
Of course we'll let all trail work lay over till the Spring.
If it rains we'll make out estimates, reports, and other things,
And do a little mapping, and straighten up our files,
Also figure on a trail that will save us many miles.
And since the phone last season, proved just to be THE THING,
We'LL build a line to Bloomfield between now and the Spring.

It's only fourteen miles, and of course we'll cut the poles,
And cut the brush along the way, and also dig the holes;
We'll stretch the wire, install the phone, and thus cut down expense,
And then, by way of resting, we're going to build a fence,
For our seedlings need protection from the sheep, the cow, and horse.
And then in stormy weather, (when we can't get out, of course)
We can study up on Grazing, Silviculture, and the like,
To polish up our 'Thinker' before we have to hike".

So the Ranger on the Tahoe has nothing to do but work,
But you can't hear any kicking, and no one tries to shirk,
For we've got to keep on hustling if we finish up by Spring.
You can bet your badge we'll be there with every single thing.
We're a happy bunch of Rangers, and when we have to part,
We'll have a friendly feeling for each other in our heart.
And we'll start our Summer's duties with a great deal keener zest,
Than if we hadn't hustled to get a Winter's rest.

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THE TAHOE

(A Quarterly Publication)

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VOLUME II. July 1912 NUMBER I

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DIRECTORY

Headquarters

Richard L.P.Bigelow	Forest Supervisor	Nevada City
Merritt B. Pratt	Deputy Supervisor	Nevada City
Charles O. La Rue	Forest Clerk	Novada City
Gertrude Emmerich	Stenographer	Nevada City
Knower Mills	Forest Assistant	Sierraville
Reese W. Taylor	Forest Assistant	Sierraville

Districts

Challenge:		
Elmer P. Gleason	District Ranger	Challenge
Walter H. Coupe	Assistant Ranger	Challenge
Charles E. Ashburn	Forest Guard	Challenge
Downieville:		
George E. King	District Ranger	Goodyear's Bar
Camptonville:		
Charles E. Whittum	District Ranger	Camptonville
Albert R. Ivey	Assistant Ranger	Camptonville
Charles W. King	Assistant Ranger	Camptonville
Martin B. Turner	Forest Guard	Camptonville
Henry W. Huckins	Forest Guard	North San Juan
Sierra City:		
Aaron H. Walton	District Ranger	Sierra City
Sierraville - Truckee:		
Woodford H. Babbitt	District Ranger	Sierraville
Vivian C. Noddin	Assistant Ranger	Truckee
Evan A. Joy	Assistant Ranger	Sierraville
George E. Poore	Assistant Ranger	Webber Lake
James U. Poore	Assistant Ranger	Truckee
Lawrence E.Overmeyer	Assistant Ranger	Tahoe City
Charles W. Bonta	Assistant Ranger	Tahoe City
Marc W. Edmonds	Forest Guard	Tahoe City

Nevada City:		
William A. Merrill	District Ranger	Nevada City
John A. McIntosh	Assistant Ranger	Emigrant Gap
Jordan H. Horwege	Assistant Ranger	No. Bloomfield
William H. Helbig	Assistant Ranger	Graniteville
George M. Noyes	Assistant Ranger	Nevada City
William D. Campbell	Assistant Ranger	Emigrant Gap
Benjamin F. Howe	Forest Guard	Nevada City
Foresthill:		
Frank A. Wilson	District Ranger	Foresthill
Charles W. Sutcliffe	Assistant Ranger	Michigan Bluff
George W. Campbell	Assistant Ranger	Michigan Bluff
Reconnaissance:		
R. W. Taylor, Forest Assistant in charge.		
Richard A. Colgan	Field Assistant	Sierraville
Thomas D. Swift	Field Assistant	Sierraville
W. F. Ramsdell	Field Assistant	Sierraville
W. A. Rockie	Field Assistant	Sierraville
B. F. Campbell	Forest Guard-Cook	Sierraville

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OUR COVER PICTURE

Our cover picture this month shows the new $100.00 35-110 power telescope purchased by the citizens of Nevada City, and installed on the Banner Mountain lookout tower.

This picture shows the Supervisor looking northwest in the direction of the Pike County Peak lookout. The only fire in sight, however, is on the end of his trusty stogie.

The telescope is of great assistance in studying the contour of the country on a clear day, but on a hazy or smoky day it magnifies the haze or smoke in proportion. When the air is clear, people can be recognized in the streets of Nevada City, four miles distant, and the features of passengers riding in Pullman coaches on the Southern Pacific Railroad, eight to ten miles away, can be distinguished.

A good pair of field glasses is of more value than the telescope for discovering fires, but often the telescope will be valuable for determining detail after the fire is once sighted.

Besides being used extensively by visitors in the day time, it is becoming very popular with love-lorn swains enamoured of the moon.

E D I T O R I A L S

—oOo—

"By Their Works Ye Shall Know Them"

The subject of this editorial was suggested by an article in a recent issue of the Arapaho Woodman, which took it from the Pend Oreville Coyote, which based it upon the following sentence gleaned from the Custer Cowboy: "Initiative consists of doing on the spot, without being told and without complaining, what the other fellow never thought of doing and didn't do when he was told". When the Woodman, Cowboy, as well as the Coyote, make special note of this sage reflection, it is time we sat up and "dangled", as the Woodman puts it, to find out how we are concerned.

Initiative is often impaired, even destroyed, by self-pity. Elbert Hubbard has an article on this subject in the July Cosmopolitan in which he says in part: "Self-pity is the act of feeling sorry for yourself. Unconsciously the self-pity habit brings indifference, then pity, then contempt, of everybody with whom the individual associates. When you indulge in self-pity you are on the slide, reaching for the swab. When we explain, when we accuse, when we denounce others, self-pity begins to consume us, and power takes wing. Carry your chin in and the crown of your head high. Keep your mouth closed, your eyes open, and breathe through your nostrils. Don't bewail unkind fate. Don't try to lay the blame on others. Let's be grateful that we are alive. There are over ninety million folks in America who never played you a single nasty trick. There's work to do. Ring in and be at it!"

The East Aurora philosopher certainly has a good line on human nature, which is the same in the Forest Service as anywhere else. There are tales of woe to be heard, and moans of self-pity sometimes issue forth from some station way off in the woods. Sometimes a Ranger doesn't think the Supervisor has enough regard for his feelings, or doesn't appreciate what he is doing in his district. Sometimes a member of the office force may feel that his feelings have been unduly lacerated by some other member. Sometimes we all may get an idea that our efforts are wasted on an unappreciative public.

The surest cure for self-pity and all it entails, is for us to keep one great slogan in mind: "For The Good of The Ser-

vice". The boast of many of us is that we are in the work for the love of it. If this is the case, we certainly should be on the job every minute. The man who lies down because he finds a chance will certainly find it will be his undoing in the long run. Results are what we are after and that brings us to the point of our editorial: "By Their Works Ye Shall Know Them".

A Forest officer's work is not judged by the number of letters he writes in to the office. He is rather judged by his works. Good work requires initiative, thoroughness, resource, and tact. Somebody who will know whether or not you have employed these qualities will come along sooner or later, and you won't have to be silver-tongued to convince that somebody of your worth if your work shows it.

So butt right in and if you make mistakes, don't let it phase you. A man is more often condemned for what he does not do than for what he does. Hubbard says "There's work to do. Ring in, and be at it". One period of preparation for the season is about at an end. How much are we all going to do "For The Good of The Service"?

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Embryo Conservationists

Solomon built a temple, and in the interim relieved himself of proverbs, many of which are followed by people to this day. One of his best reflections was to the effect that if a child is brought up in the right way, he will not forsake his early training when he grows up. There was a time when parents, desiring to shape their children's characters rightly, fed their impressionable brains upon certain mushy "Willie" and "Susie" books in which the tales related were so far from actual life as the Diamond Dick novels which they so religiously scorned. The present day tendency, however, is to give the child something to read that bears on his everyday life, and in such a way that he will be impressed with facts as they actually exist.

This was forcibly brought to our attention recently when a member of this Forest received a Sunday School paper from his younger brother back east in which was an article entitled "Fire Brigades of our National Forests". The article, which was illustrated by cuts of the Banner Mountain Lookout Tower and a fire-fighting scene at Hobart Mills, was accurate in detail. It will

make a lasting impression on any child that reads it, and lay the foundation for a better conservationist than was the old Hebrew King himself who cut down all the Cedars of Lebanon for his temple.

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THE DIFFERENCE

(With Apologies to the Sierra Ranger)

As It Was In 1861

Extract from January Harper's:

"Mark Twain heard that the timber around Lake Biglor (Tahoe) promised vast wealth which could be had for the asking. He decided to locate a timber claim on its shores. He went to the Lake with a young Ohio lad, staked out a timber claim, and made a semblance of fencing it and of building a habitation, to comply with the law. They did not sleep in the house, of which Mark Twain says: 'It never occurred to us, for one thing, and besides, it was built to hold the ground, and that was enough. We did not wish to strain it'.

They lived by their camp-fire on the borders of the Lake and one day -- it was just at nightfall -- it got away from them, fired the Forest, and destroyed their fence and habitation. His picture of the superb night spectacle -- the mighty mountain conflagration -- is splendidly vivid:

'The level ranks of flame were relieved at intervals by the standard-bearers, as we called the tall dead trees, wrapped in fire, and waving their blazing banners a hundred feet in the air. Then we could turn from the scene to the Lake and see every branch and leaf, and cataract of flame upon its banks, perfectly reflected, as in a gleaming, fiery mirror. The mighty roaring of the conflagration, together with our solitary and somewhat unsafe position, (for there was no one within six miles of us), rendered the scene very impressive'.

As It Would Be Now

Press Dispatch, August 15, 1912.

MARK TWAIN FIRES FOREST !!!

Noted Humorist Charged by Forest Officers with Criminal Carelessness.

Mark Twain and a friend from Ohio, who have been camping on Lake Tahoe, are responsible for a Forest fire which burned over about 200 acres before it was checked by Forest officers. The fire was sighted at 6 o'clock P.M. by one of the co-operative patrolmen of the Crown Columbia Paper Company, who at once telephoned to the tender of the Launch "Ranger" for help. Within an hour the launch was on the scene with a dozen men picked up at Tahoe City, and by 10 o'clock the fire was practically under control.

Twain and his friend were found spell-bound by the Rangers, at the impressiveness of the fire. After fighting it for several hours, however, its grandeur palled upon them, and at the present time they are considerably exercised inasmuch as it was ascertained that the fire was a result of their carelessness in leaving a camp-fire to burn unattended. It is extremely likely that the well-known humorist will find the penalty attendant to his carelessness, no "joking" matter.

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The lurid issue of the Sierra Ranger had a peculiar effect on the eyesight of a member of the office force. Everything looked green to him for a while after reading the red print. This is another point going to show that the red issue was a brilliant idea inasmuch as the green hue it induced produced a decidedly optimistic feeling on the part of the person affected.

We extend our congratulations to the Board of Editors on the Sierra for their novel and well gotten up issue, although we take issue upon the reflection on the manner in which we obtained the treating plant. We admit that Lake Tahoe has something on Shaver Lake, but as a matter of fact a small reservoir capable of holding thirty poles, and made by damming up a spring, suffices for the experiment.

C O N T R I B U T E D A R T I C L E S

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Preservative Treatment of Telephone Poles by the "Boucherie" Process.

By

J. H. Horwege

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It is the general purpose of the work outlined in the experiment, which is located at the North Bloomfield Ranger Station, to determine whether or not the "Boucherie" process is adapted to the preservative treatment of poles under conditions met with in constructing telephone lines on the National Forests.

The experiments are planned to ascertain:

(a) The factors influencing the treatment of each species such as the effect of daily temperature, season of cutting, and seasoning upon rate of absorption; also, the effect of water storage and of varying solution pressures at point of application.
(b) Length of service resulting from treatment.
(c) Detailed cost of each step in process.

Four hundred and sixty-eight poles are to be treated at the plant, selected as follows:

245	White Fir
205	Western Yellow Pine
9	Douglas Fir
9	Incense Cedar

The main apparatus consists of a skidway composed of three peeled poles 60 feet long, laid parallel 8 feet apart. The first skid pole is raised about 16 inches higher than the others so as to give the poles a slant during treatment. On or near the ground and parallel to the first skid pole, a half inch

brass pipe, consisting of forty 18-inch sections which are threaded on each end and connected to each other with brass tees, is laid. Into each tee at right angles to the main feed pipes, a 4-inch piece of brass pipe is screwed, to which a piece of 3/4-inch rubber hose is attached which terminates in a wooden spigot.

At one end of the skidway at a height of 25 feet from the ground a platform is built, upon which six barrels are placed and are connected with siphons. From the bottom of one of the barrels, and fastened to it by a piece of ½-inch brass pipe, a 28-ft. length of 3/4-inch rubber hose is connected with the feed pipe along the skidway. This gives the pressure to force the solution into the poles.

The poles are rolled upon the skids so that each butt is opposite one of the rubber offshoots from the main feed pipe. A ring of 1/2-inch composition packing is then fastened to the end of each pole just inside the bark. A square piece of 1 or 1½ inch dry cedar board is then placed over the packing. This board is tightly drawn up against the packing by means of two lag-bolts which are driven into the poles opposite each other, and passed through a slotted piece of 2x4 wooden strip, which bears against the butt-plates and is screwed tight, making a close fastening against the packing. A small chamber is thus formed at each butt. A 5/8-inch hole is bored into each butt-plate to admit the wooden spigot through which the solution is forced from the main feed pipe.

The solution is made as follows:

The required amount of copper sulphate, (about five pounds of the dry salt to 40 gallons of water), is weighed and dumped into a pail. Hot water is then added and stirred with a wooden paddle until the salt is dissolved. The concentrated solution is then poured into mixing barrels filled with water and again thoroughly stirred. The solution is then pumped into the pressure barrels for use.

After being connected and the preservative solution turned on, the unpeeled poles are allowed to remain on the skidway until the preservative solution begins to appear uniformly throughout the top. It is sometimes necessary to turn the poles so as to make the solution take effect on the top side of the pole. The average time that it takes to treat the poles is about five days.

Sixty-five of the treated poles will be used in the telephone line which will be constructed this Summer from the Bloomfield to the Miller's Ranch Stations.

Impressions of German Forestry

The following extract is taken from a recent letter from William H. Gallaher, formerly Forest Assistant on this Forest, giving his impressions of German forests and their treatment. We are taking the liberty of putting this extract in the Tahoe on account of the characteristic way in which it is written, and because we think that it will prove interesting to everyone who reads it:

"The first criticism one would make of north German forestry is its everlasting and even tiresome simplicity and sameness. It is merely cut your wood, plant your trees, thin periodically, and cut again. A two days' trip through a pine forest is the most monotonous thing imaginable. Here you see ten acres, ten years old; there, twenty acres, forty years old; again fifteen acres, ninety years old; or, ten acres, one hundred and twenty years old, and just being cut.

One soon learns what a two-year old or five-year old transplant looks like; and that's all there is to it. Thinnings are simplicity itself, taking out poorly formed dominant and suppressed trees.

The systems, and consequently the appearances, of hardwood forests are somewhat more varied. The germans use natural regeneration in beech by the group or uniform shelterwood system with great success. They are even learning how to regenerate oak naturally again, using the shelterwood system. It may surprise you to learn that they are now experimenting with natural regeneration of pine and hope to know something about it in 20 or 30 years.

On many forests one sees sample plots for this study which is now of great interest here. Rather funny, eh? To think of our talking wisely of how many seed trees it is correct to leave per acre when the Germans, themselves, confess they don't know what to do at present.

The great object here is to obtain even-aged forests. The selection system has proved an absolute failure even with the most tolerant species. The shelterwood system is very difficult to apply on account of the damage to the young crop occasioned by the removal of the old. Unless the old crop is

removed within 6 or 7 years after the cutting, it is almost impossible to do so and consequently the trees must be left as standards over two rotations or may be taken out with some of the latter thinnings in the second crop when its trees are approximately the same height as the standards, and are therefore not damaged much. I am now of the opinion that such a method is the practical one with us, scattered seed trees left which are to be capable of lasting for a second cut in, say, 150 years, said trees not to be too thick, especially in pine, or great damage will be caused by suppression to young trees. What I see later in Switzerland in the selection system (for watershed protection) and India may change this.

Another great lesson learned here is the value of a forest floor. A German considers any forest second-class which shows any grass underneath. Underbrush, of course, is entirely lacking. I might say that a luxurious growth of grass and weeds appears whenever the stand is opened up, but so injurious is this held to be that the Forester will go to great expense in planting an underwood of beech under intolerant pine and oak which, of course, lets considerable light through. The result is magnificent two-storied forests with good growth.

Planting here is often cheap. In light sandy soil it can be done for 2-marks, or 50 cents, per thousand seedlings. However, 8,000 plants are often set out per acre -- in fact, this is the usual number in pine. One-year seedlings, not transplants, are most often used. Spruce is 3, 4, or 5 years old; Douglas Fir, 2 years. Beech is usually planted between pine to serve as ground cover, as noted above.

At Trippstadt I saw the oldest stands of White Pine (Strobus) in Germany. The largest tree is 89-CM in diameter. This stand has already been cut and regenerated. Rotation is 120 years for this species. It is being looked on with more and more favor, as it covers the ground much better than Scotch Pine, which is the native here. It gives such a good crop of needles and holds moisture so well that one Forester I was with at the time, who had not seen the stand before, went wild with enthusiasm, and a couple of them talked at triphammer rate for half an hour on the subject. It is interesting to note that shelterwood system has been used also, although in their own native pine it is only in the experimental stage. Their chief difficulty with the tree at present is the sale of the product of thinnings. Much of the native pine is sold as mining timbers, but "Strobus" is somewhat weaker and the miners will not buy it.

Furthermore it is not so good for stove wood.

To show how important the ground cover is here, I saw a stand which was somewhat open and in an exposed place. Dry bark and needles had accumulated somewhat "Rohhumus" and the Ober-Forester informed me that he was now cutting the stand, but that the second crop would only be 3/4 as high and contain about 2/3 as much timber as the one before. If deterioration keeps on he doubted if the third crop could be called a "stand" at all, so poor in form would it be.

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The Ranger's Education

By

A. H. Walton

I would like to say a few words in regard to the education of the Ranger as it appears to me, after reading Mr. Noddin's article in the last issue of the Tahoe.

When I entered the Service in 1907, the Ranger's work was entirely new to me. The technical side of it, required to a certain extent in reports, was like Greek, except to a few. Since that time the Ranger has advanced through study and observation so he is familiar enough with the technical, and other features of the forms to make an intelligent report. It seems to me that the Service is endeavoring to continue this valuable work through correspondence courses, during the Winter months, so that the Ranger of the future will have everything thoroughly at his command. This is necessary as the standard will be constantly raised -- and Efficiency is the goal.

On the other hand, I do not think the graduate in Forestry will endeavor to become a Ranger. He has had a thorough education along specialized lines and is looking for a technical position. The life of a Ranger is lonely to a certain extent, in most cases, the social side being entirely lacking. Also the duties are certainly diversified. In reality, he is the Jack-of-all-Trades of the National Forest.

Every Ranger knows that the better his knowledge is

of technical subjects, the easier it is to get through his work in a satisfactory manner. The Government is not trying, in my opinion, to make the Ranger, by study, put himself on an equal footing with the graduate of the Forestry school, but is trying to make the ranger a more efficient man.

The constant raising of standards, changes of laws and reports requiring technical knowledge, will keep the Ranger studying to keep up to date, without trying to cultivate a technical education equal to the Forest School graduate, which would be impossible, unless he took leave of absence and attended some accredited school.

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Voluntary Fire Wardens as Assistants

By

George E. King

I have been successful in getting quite a number of citizens throughout my district to accept the position of Voluntary State Fire Warden. This will be a big help during the fire season, since I have the assurance that if a fire starts wherever one of them is located, that he will have all the available men at the fire probably hours before I reach it. These Wardens, in turn, have the assurance that as soon as the Ranger gets word of the fire, that he will be to their rescue with additional help and supplies.

I have found that it is not a hard task to get citizens who are in localities where there is danger of fire to accept the position; in fact, much easier than I first anticipated. In each case I have fully explained the situation, stating that I might be ten miles away at the time the fire started, and possibly before I could reach it that it would be under such headway that it probably would take a day or two to get it under control. If a Fire Warden was at hand he would have authority to get a crew together and thus save hours of work, as well as much timber.

If a man was not a Fire Warden and stood back and waited for the Ranger to come along, he would be sure to have to go as

well as his employes, if he had any, and thus hours would be lost through his not going to the fire at once.

A number of good citizens who have been appointed Fire Wardens have agreed with me on this point and I have no fear but what they will be on hand if a fire starts anywhere in their locality, especially since I have not asked them to go any long distance out of their way.

I think that all the Rangers can work up additional help in this way if they will dig into the right class, and in time we will have the woods full of Fire Wardens as our assistants.

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Banner Mountain Lookout Notes

"I, Benjamin F. Howe, moved up to my Summer home upon the top of Banner Mountain on June 1, to watch over the Forest for fires.

The first few days were very hot. Then it got cool, and the rain came down, and the wind blew hard and cold. Then I picked up my kitchen and took it in the bed-room, which is the 6x7 tent (too large), and piled into bed to keep warm the rest of the day. I sometimes have my blanket around me to keep warm.

Could not have a fire the night of the 15th. The wind blew so hard that it took off my lid -- that is, the canvas from over the Tower. I picked up my bed and my grand-daughter, Lillias E. T. Howe, who was with me, and went to the high timber the rest of the night. Then it cleared off and is nice weather again.

I have had 360 visitors up to July 8th. This Summer I am going to get a cabin -- maybe.

Benjamin Franklin Howe,

Lookout.

P.S.: The Big Cannon is all O.K. to look through. Good for from 1 to 1,000 miles."

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Suggestions for Posting Fire Signs

By

George M. Noyes

The business of posting fire warnings should receive the same careful consideration that is demanded in the bringing of any other class of advertising before the public. The primary idea is to have the signs so placed that they will not only be seen, but read and re-read by campers, stockmen, hoboes, as well as everybody who smokes or is likely to use fire in the woods. They must be so placed that people will read them whether they feel that way or not.

In order to accomplish this end, it is not sufficient to simply scatter them along the main roads, but branch roads and trails should be thoroughly posted, for these are the ways largely frequented by fishermen, hunters, and campers. A certain amount of discrimination must, however, be used in placing them. To simply post them along at certain intervals is not sufficient, for a very small percent of those which are thus casually placed will ever be noticed. For instance, one placed alongside a sloping piece of road where there is no shade or level spot at which a traveler might stop to rest will seldom, if ever, be read. Therefore, care should be taken to select possible resting places as well as places which are suitable for camping.

A watering tank is a good place to have signs posted conspicuously since the passenger's eye will light on them almost unconsciously while waiting for the horses to drink. Likewise, those nailed up at a road-side hotel or saloon will command a large share of attention which may help to justify their existence. And again there are trees along the road which from their size, isolation, or other peculiarity are sure to attract the eye of the passerby, and incidentally direct it to the sign attached thereto. A dead snag with its smooth white trunk, or better still, one that has been charred by fire, makes a good background for the yellow signs, and the presence of the effect of fires will give the warning greater significance.

A tree on the outer side of a bend in the road has an advantageous position in that the warning catches the traveler's eye before he reaches it from either direction, and the notice will be read before it has been passed by. When placed squarely on the side of a straight road the sign will not be seen until one is directly opposite. On this account it would seem advisable to face the signs alternately in opposite directions along the road. In this way the traveler's attention will be attracted at a distance, his curiosity aroused and the impression we are striving for, gained.

In this connection I believe that a variety of fire warnings along the order of modern advertising methods would prove more effective than a cut and dried sign which tends to grow monotonous to the traveler.

EDITORS NOTE: In connection with the above article we wish to state that the monotony of the cut and dried signs has been apparent for some time, and that quite recently the District Forester called on Supervisors for suggestions of signs along the line of present day advertising. A good variety was suggested by this Forest and these, in connection with other Forests, should result in something entirely different in the way of fire warning signs than we have heretofore been using.

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Ranger Wilson has the following suggestion to make regarding marking hatchets:

"For the last three or four seasons I have been experimenting with our marking hatchets to see if they could be made more effective. The short handles were not good and the long ones were too long, and a poor excuse when cut off. At last I tried the experiment of putting a boy's axe handle into one of them and the results were far better than I expected. This handle is light, well shaped, and not too long to carry on a saddle horse. It makes a first class light brush axe and when it comes to marking timber the handle is long enough to save bruising your hand. Anyone wishing to try this experiment will find that these light axe handles are the right size to fit the marking hatchets with very little trimming down".

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S I L V I C U L T U R E

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A Supervisor's sale of 790,000 bd. ft. of Jeffrey Pine and White Fir was made in May to the Verdi Lumber Company. Sales have also been made for 900 cords of Black Oak wood to J. Zenacco, and 1200 cords to Sherman Marsh.

A specimen of Pea Chaparral (Pickeringra montana) was found by Forest Assistant Mills hoar Nevada City. Dr. Jepson of the University of California says that it has never before been reported this far south in the Sierra Nevadas.

A fine grove of Tan Bark Oak (Quercus densiflora) has been reported at the Delhi Mine near North Bloomfield. The trees are from 60 to 100 feet tall. The wood is fine, straight grained, splitting like ribbon, and is used in that locality for making axles and mine rollers.

Cordwood volume tables for Red Fir have been completed by Forest Assistant Taylor. Supervisor Redington noted the item in our last issue regarding the preparation of these tables and wrote asking for a copy when they were completed. He was referred to the District Office where other Supervisors can doubtless obtain them is they so desire.

In view of the large amount of Lodgepole Pine and Poplar on this Forest for which there is little demand at present, the following description in the Deerlodge Ranger of the manufacture of excelsior from these species is of interest:

"An interesting visit was made to the Montana Mattress Company's Plant a few days ago, while getting information for the report of wood consumption of the Butte market. In this plant there is a department for the manufacture of excelsior. The wood that is used in this plant is principally Lodgepole Pine and a small amount of Cottonwood. In order to get the best grade of

excelsior, the wood must be straight grained and clear of knots. It must be cut green and then seasoned and cut in six-foot lengths. At the plant it is again cut in eighteen-inch lengths which give six pieces of eighteen-inch timber. The following manner is the method of making excelsior:

First, remove the bark; then place the wood in a clamp that has an automatic feed. The knife and spur-bit work on an upright piston. The spur-bit is an arrangement made of steel with teeth about one-sixteenth of an inch long and five inches in width. This marks the wood, and the knife follows, shaving off the wood into long, feathery strings. One cord of wood will make about 1,200 pounds of excelsior of the first grade and about 400 pounds of the second grade. There are only two grades made at this plant. The excelsior is baled by machinery for shipment. A bale will weigh approximately seventy-five pounds. The plant consumes about 300 cords of wood a year, producing an average of twenty-five bales per month.

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H E A D Q U A R T E R S N E W S

District Engineer Walter Huber spent a few days on the Forest in June, investigating several water power propositions.

Assistant District Forester L. A. Barrett and Supervisor Bigelow made a tour of the Forest the early part of July, being in the field about two weeks.

G. M. Hunt of the Office of Products is in charge of the treating and distillation plant at North Bloomfield. Mrs. Hunt is with him and their camp under the pine trees is as cozy and home-like as anyone could desire.

Maurice S. Macy, Assistant Ranger in the Sierraville District last Summer, has resigned his position. He will engage in ranching in the San Joaquin Valley.

Several designations have come to our notice recently which we have failed to classify. Some of these interesting modifications of our filing scheme are: "00-Tahoe-Fire-Tin Fire Signs", "00-Operation-Uniforms-Corduroy", "00-Tahoe-Conglomeration".

Deputy Supervisor Pratt took a two weeks' trip the first part of May through the Sierraville, Sierra City, and Downieville Districts. He was chiefly engaged in getting a line on the timber sale business for the season.

The interest which the members of the fair sex take in our work is often very gratifying. Recently a member of our force was commenting on the large amount of timber sold during May on the Forest, in the presence of a young suffragite. "Really", said she, "What do people want with so much wood this hot weather?".

Forest Assistant Taylor, who is in charge of the reconnaissance crew engaged in estimating the block of Red Fir near Sierraville, left Nevada City on June 20 to plan the season's work on the ground.

Ranger Merrill recently made a mineral examination of two sections near Graniteville. His report will be used as the basis of an effort to clear up the status of these lands which are heavily timbered.

The cartoon in this issue was drawn by Assistant Ranger Poore to illustrate his experience in mending fence at the Webber Lake Station this Spring. It is a story without words, which may be very aptly used in connection with the experiences of another Ranger told in verse. We are indebted to Mrs. La Rue for the stencil.

A pitiful wail comes from one of our back number contemporaries, who says he can't use the tin fire warnings for pocket handkerchiefs or dish towels. For his benefit we would suggest that they can be employed as fans in the hot weather, as ash trays, dust pans, pistol targets, and in a variety of other useful ways.

As an illustration of the unexpected, the fire record to date is interesting. We usually expect our early fires in the Camptonville and Challenge districts, but this year they all occurred on the east side of the summit at an elevation of from 5,000 to 6,000 feet. Only a few small fires, most of them less than an acre in extent, have been reported so far in what we consider the dangerous fire belt of the Forest.

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D I S T R I C T N E W S

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According to reports, about 5,000 people will visit Gold Lake and vicinity this Summer. Sam B. Lush has had over 400 letters asking for accomonations at his resort.

Ranger Walton has surveyed out two acres near the head of Gold Lake for a Summer resort, of a commercial nature, for Chas. Freeman.

Assistant Ranger J. U. Poore has been kept busy repairing telephone lines. Lately he has worked on the Squaw Valley, Lake Tahoe and Truckee Station lines.

Assistant Ranger Geo. E. King reports that black caterpillars are cleaning up the White Birch brush, leaving patches that look like a forest fire had gone through it.

The Rangers on the Foresthill district have repaired 25 miles of old telephone line and built about five miles of new line this year. Assistant Rangers Campbell and Sutcliffe have been recently working on a flume to water the pasture at Sugar Pine station.

Although the rainfall was below normal during the Winter in the Sierra City district, yet the late rains have made a splendid growth of feed, and the outlook is for a banner grazing year. The mosquito and rattlesnake crop is excellent, three snakes a day being the ranger's average.

Gold and Salmon Lakes have been stocked with 60,000 Loch Laven and Eastern Brook trout, and as the former grow to 15 lbs. the disciples of Isaac Walton can have good sport in this region in a few years.

The Forest Service Launch "Ranger" was put into the waters of Lake Tahoe on June 21, Supervisor Bigelow superintending. The launch will be in charge of M. W. Edmonds, who will camp at Kent Ranger Station. He will always leave word at the Tavern as to where he can be found and a message to that point will be delivered as soon as he lands at any point.

The Truckee Ranger Station has been painted by Ranger Dooley, the roof red and the sides dark brown. At last reports he was contemplating making a meat safe, a china closet (Rangers always have china -- they get it from mush packages), and other comforts of a bachelor camp.

Charles Bonta and Lawrence E. Overmeyer have been appointed Assistant Forest Rangers and assigned to cooperative protective work under cooperative agreement with the Crown Columbia Paper Company. They began their duties on June 10, Bonta being stationed at the Beartrap Cabin near Lake Tahoe, and Overmeyer at Sawmill Camp, where a pasture is being fenced for his stock. On account of the dry season the Paper Company intends putting on another patrolman the middle of July. W. C. Williams, who passed the Rangers' examination last Fall, has accepted this position.

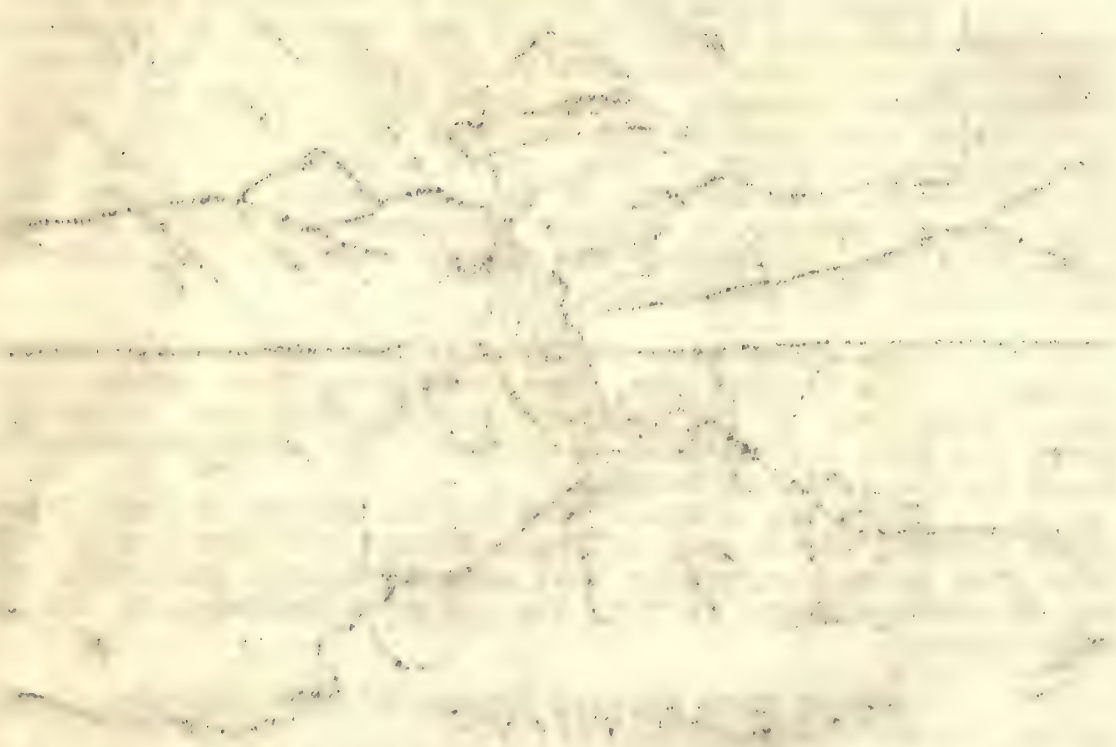
Nine fires have occurred in the Sierraville district to date. The largest one, an eighty acre fire, spread from the right-of-way of the Southern Pacific Railroad, probably being set from sparks from an engine. No assistance was rendered by the Railroad Company.

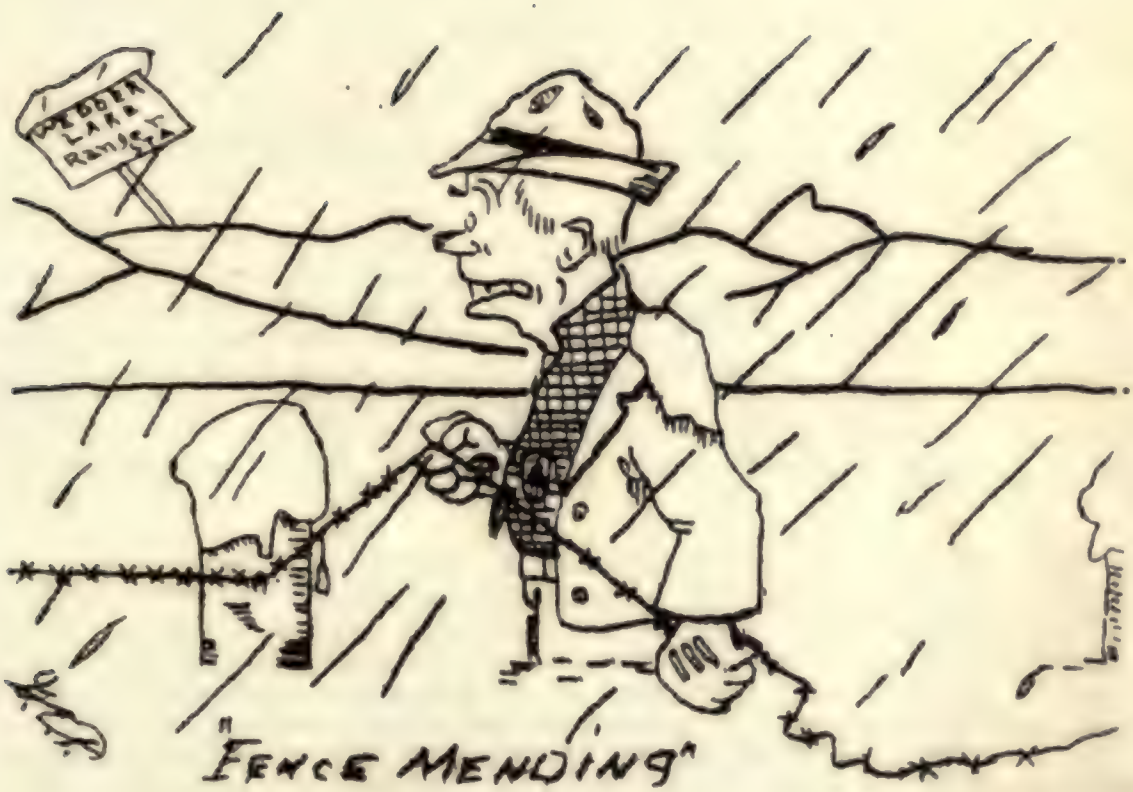
There was a small fire on the shores of Lake Tahoe which delayed the dinner of three Forest officers for a while. This fire proved unique in that several ladies gallantly assisted in extinguishing it with the aid of a garden hose and Lake Tahoe water.

Extract from Service Report of Marc Edmonds, Captain of the Launch "Ranger":

"Went out to middle of Lake for a view. Wind came up very suddenly. Had to fight for shelter. Got soaked through. Got to mooring at 5 P.M. Cleaned engine. Got seasick from oil fumes and violent motion."

The grazers are rather backward in the Truckee region on account of the late season. The feed has just started and is yet of poor quality. No cattle came in the district until after the 20th, and several bands of sheep will not be in until about July 15. Several Nevada owners who are usually across the Washoe Mountains by this time of year, have not showed up yet.





"FENCE MENDING"

T H E T A H O E

(A Quarterly Publication)

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VOLUME II November 1912 NUMBER 2

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"It Was Not Like That in the Olden Days"

Truly we are living in progressive times. If we cannot fully comprehend the fact all by ourselves, it only remains for us to review the events in the past campaign and we get the idea immediately. We are likewise reminded of the change in the affairs of men when we pay our grocery and meat bills. Then, of a truth, we are brought face to face with the realization that times have changed since we were boys. Then a balloon ascension was a momentous event, and the bicycle a favorite method of conveyance.

Not long ago, hoary mountaineers about Emigrant Gap were startled from their Rip Van Winkles by the appearance of a flying machine in their midst, and now the brute creation no longer stands in amaze and terror as benzine buggies buzz by. People are even becoming accustomed to a Forest officer in our progressive times, and some begin to realize what his advent is all about; No longer are there manifestations of curiosity or alarm when he appears, and the impression that he really does work has gained wide credance.

We, likewise, are different than in the olden days when a badge was apt to impart rather of a cocky feeling. It means just as much to us as it ever did, but the cockiness has been superceded by horse-sense as regards the position of the other fellow. In those early days we were so busy with petty details that much of the larger things escaped our notice, and if they did intrude themselves on our minds, we were not prepared for them.

Now we are selling millions of feet of timber without batting an eye-lash, establishing nurseries, planting trees, and

making all sorts of investigations that tend towards real conservation. The real object of our work is becoming apparent and although we are often up to our necks in routine, yet we are not over our heads like we used to be, and can see ahead of us, the goal of our endeavors.

In a word, intensive management is now a realized fact, and we are emerging from the stress of preparation with a product ready to be developed to the highest point of usefulness. We have been the builders, and whether we have builded well remains to be proven in the years to come.

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"He who would do some great thing in this short life must apply himself to work with such a concentration of his forces as, to idle spectators who live only to amuse themselves, looks like insanity" -- Parkman.

"Don't be prejudiced against all new ideas because they invariably surprise you" -- Meehin.

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Concerning Fires

Everything considered, we have had the most successful fire season we have ever had. The conditions this year were just as bad as last, yet last year we had a burned area of 3937 acres compared to 455 acres this year. This indicates that our system is becoming better perfected, also that the missionary work we are doing is having its effect. What are we going to do towards overhauling the parts of our machine this Winter, and remedying its defective parts?

The office is going to do a whole lot and expects you to do your share, so be prepared to revise your ideal plans and prepare wall maps to illustrate it.

1912 Fires by Districts

	A ¼ Acre and Under	B 10 Acres and Under	C Over 10 Acres		
			1 Damage Under $100	2 Damage $100 to $1000	3 Damage Over $1000
Nevada City	3	2	1	0	0
Camptonville	1	5	5	0	0
Challenge	2	1	0	0	0
Downieville	0	1	1	0	0
Sierra City	0	0	0	0	0
Sierraville	10	2	1	0	0
Foresthill	2	1	1	0	0
Total	18	12	9	0	0

As usual the Camptonville District proved the greatest danger spot on the Forest, the region between Camptonville and San Juan being the scene of the Class C fires in the district, most of them being incendiary in character.

Fires Fought Outside Forest Boundary

	A	B	C
Nevada City	0	0	1
Camptonville	0	1	1
Challenge	0	2	1
Downieville	0	0	0
Sierra City	0	0	0
Sierraville	5	7	2
Foresthill	0	1	0
Total	5	11	5

The greatest damage was done by fires outside the Forest, the ones at Horn Hill, San Juan, Dobbins Creek, and Badger Hill doing damage ranging between $100 and $1000. All of these fires were prevented from entering the Forest by the diligence of Forest officers. That we did not have larger fires is largely due to our lookouts on Banner, Pike County

Peak and San Juan. There was 374 acres of Government land burned over this year, 165 acres of this being classed as timber land. The estimated damage to timber was $50, the value of reproduction being estimated at $350. Eighty-one acres of private land within the Forest was burned over, twenty-five dollars worth of timber being destroyed.

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Hydro-Electric Development on South Yuba and Bear Rivers

The Pacific Gas & Electric Company has a hydro-electric project of colossal proportions under way on South Yuba and Bear Rivers, part of it being within the boundaries of this Forest. The following account of the work being done was compiled from several articles which appeared in the Company's magazine for August:

On July 3, 1912, work was begun on a project which has been under contemplation for some time and which was recently made possible by the purchase of $20,000,000 Pacific Gas & Electric Company bonds by J. Piermont Morgan. The Company has long controlled and used to a certain extent a system of twenty reservoirs within the catchment area of the South Yuba River. The system will now be greatly enlarged by the construction of a dam a short distance down stream from Lake Spaulding, an old reservoir site about two miles northeast of Smart Station, on the Southern Pacific Railroad, at an elevation of 4000 feet.

This dam will create a reservoir having a surface area of about 707 acres and a storage capacity of 30,000 million gallons. The watershed directly tributary to the reservoir will annually discharge 60,000 million gallons into it, or double its storage capacity.

The rock required for the concrete for the dam will be quarried out of the bluff over-topping its southerly abutment. Lumber for construction work is being sawed at the old Birce & Smart sawmill. It is estimated that the reservoir site has on it at least a million feet of saw timber, all of which will be utilized. A considerable part of this timber is located on Government land of which there is approximately 90 acres embraced in the reservoir site.

The reservoir outlet will be a solid rock concrete tunnel 4,427 feet long. This tunnel will conduct the water to the upper end of a concrete lined canal 8½ miles in length, having a capacity of 16,000 miners' inches. The canal will conduct the water to a point about three miles northeast of Towle Station on the Southern Pacific, to a regulating reservoir known as the "Drum Forebay". From this reservoir will lead two riveted steel pipe lines, 6300 feet long and 72 inches in diameter at the upper end to the power station 1,350 feet lower in elevation on Bear River. Here the water will be directed against eight water wheels, each with a capacity of 9000-HP. The pressure at the nozzle of the 7-inch stream upon the water wheel buckets will be 585 pounds per square inch, or nearly three times the high steam pressure used by the big locomotives of the Southern Pacific Company.

Electric power from the plant will be transmitted on a double circuit steel tower line nearly 115 miles to the Company's sub-station at Cordelia Marin County, thence to San Rafael and, through this, long distance transmission power will be supplied to all sub-stations along the line and to the cities around the bay.

The work is being energetically carried on at the present time, 1400 men and 500 head of stock being engaged in clearing the right-of-way from the site of the power house to that of the storage reservoir. It will take at least two years to build the Spaulding Dam which will be one of the highest in the world. Additional power plants to that in Bear River will be constructed further down stream, so that when the entire work is completed, the Pacific Gas & Electric Company will have increased its hydro-electric power service by upward of 100,000-HP.

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C O N T R I B U T E D A R T I C L E S

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Observations on Growth of Red Fir and Yellow Pine at High Elevations

By

W. H. Babbitt

It is probable that in the near future there will be a sale made for the belt of red fir timber lying between Webber Lake and the north boundary of this Forest, to manufacturers of paper pulp. This belt of red fir is largely made up of over-mature timber which is deteriorating each year and the system under which it will be cut is a matter of great interest to the rangers of this district.

I believe that it is the policy to mark this class of timber under the "Group" system, to prevent wind throw and insure reproduction. The seedlings of red fir, according to my observations, grow very slowly. I have counted fifty year rings on one no larger than my thumb, and smaller ones were proportionately old. The seedlings grow faster in openings, but even the tiny trees will be found to be very old, growing very little in the first twenty years. Competition of root systems may account for a great deal, but I believe that I am right in stating that it is the nature of the tree to develop slowly at first and that it will be at least fifty years before reproduction will establish itself after cutting.

The extreme elevation of the tract is eight thousand feet, but the larger portion is between six and seven thousand feet in elevation. There are occasional yellow pine trees growing with the stand of red fir at seven thousand feet and these trees look thrifty and make good lumber. They appear to grow as fast as the red fir at the same elevation and year rings counted from trees cut at Yuba Gap show that the rate of growth is good. One tree that contained five thousand feet of timber had grown thirty-two inches in seventy-five years and other stumps showed a similar growth rate.

An even more rapid rate of growth was noted on stumps near Lewis Mill at an elevation of over six thousand feet, but in marking a sale for cordwood, some time ago a Forest officer was criticized for not marking the pine clean, the theory being that fir was the best tree for the elevation. This would be true if reproduction could be established within a reasonable time, which does not seem to be the case. The seedlings of the yellow pine seem to grow as fast at seven thousand feet as they do anywhere and I believe that every effort should be made to replace the red fir with a rotation of yellow pine and that the pine would mature and be replaced by the red fir without greatly retarding it.

I believe that we would have better success with seeding yellow pine on these high, damp table-lands than we do at lower elevations as it is the drouth that kills the seedlings, and that we should experiment even if with only very small areas such as can be planted by a ranger in a few hours. Of course, in applying this theory, many areas would be found where the second growth of fir had attained diameter of six inches or over, after which it grows very rapidly when the stand is opened up, but I know that there are large areas where the pine belt may be extended. I believe that by leaving all of the pine as seed timber, that the above rotation would naturally follow. If a sale is made in the red fir belt, I would like to see the pine favored on a portion of the area cut-over at least. Splendid opportunity can be afforded for studies of rotation and growth at any rate.

Note: While surveying boundary north of Mt. Rose, Assistant Ranger Noddin and I observed that where the mountains had been stripped of all pine large enough to make fire wood, during the boom at Washoe and Virginia City, and quite a few large red fir left, that pine reproduction had seeded the entire tract and these seedlings were on an average ten feet high, while fir seedlings had scarcely made a start, although the cutting extended to above 7,000 feet elevation.

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A Xylometer Test

By
R. W. Taylor

The use of red and white fir in paper making has opened a new market for those two inferior lumber species. The practicability of their use has been settled without a doubt.

The Crown Columbia Paper Company has a mill at Floriston, California, which uses annually about 30,000 cords. All kinds of general wrapping paper including thin, fruit wrappers are made. The pulp is not good enough for the higher grades of paper but when it is realized what a vast amount of wrapping paper of all kinds is used and that the supply of other pulp material is rapidly diminishing, it will be seen that there is bound to be in the course of a few years, a steady demand for red and white fir.

In anticipation of the demand for pulp wood, a reconnaissance was carried on this Summer in the fir region of this Forest, west of Sierraville. Instead of estimating in board feet and applying the 500 board feet cord equivalent, it was thought best to determine more accurately the cord measure. For this purpose 25 cords of mixed red and white fir were measured in a Xylometer in the wood yard of the Crown Columbia Paper Company at Floriston to determine accurately the cubic contents of an average cord of split fir such as is used at this mill.

The work was carried on the first part of May. The Xylometer consisted of a galvanized iron tank 4½ feet high and 2½ feet wide, graduated on the inside. The tank was filled with water up to a certain mark on the graduated scale, each stick immersed separately, and the rise of the water, equivalent to the volume of the stick, noted. The cords were piled after the sticks had been measured, making each one as near 4'x4'x8' as possible. Notes were taken upon the amount of bark, rot and crook in each stick, in case it should be desired to compare this wood with other cordwood of the same species.

It was found that the average of the 25 cords contained approximately 80 cubic feet. I do not know if other measurements have been made of similar cordwood but I think 80 cubic feet is slightly less than the contents given for cord-

wood of other species. However, not a great many Xylometer measurements of this nature have been made in this country and there are very few sources for comparison.

This converting factor of 80 cubic feet was applied to a cubic content (diameter-total height) volume table made upon this Forest and a cordwood table obtained. We will thus be able to obtain a very fair cordwood estimate of the red and white fir.

This Xylometer test, put to a practical use, is a comparatively new thing, but it tends to show that the standards and methods of wood mensuration are bound to be placed upon a more accurate basis. It is only a small but a very interesting beginning, and it is hoped that we will soon have figures from other localities for a comparison. The Xylometer was a rather simple and crude instrument, but it served the purpose well.

If extensive work was to be carried along these lines, it would be better and cheaper to have a Xylometer in which several sticks, if not a whole cord, could be measured, at once.

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Logging in Germany

By

Wm. H. Gallaher

In many respects lumbering methods in Germany are similar to those employed in parts of New England where good markets and second growth timber have caused the introduction of the small and portable mill. As the virgin stands gradually disappear in the west, we may anticipate the same conditions and the gradual adoption of similar methods. A glimpse at German logging and milling will therefore give us a general idea of how our own timber will be handled in fifty or a hundred years.

Timber is felled in Germany during the Winter months from November to March. Labor is employed in agricultural pursuits during the Summer and is difficult to obtain, and furthermore the work in the woods is more easily carried on during the time that the leaves are off the hardwoods. Fell-

ing is done by "Holzhauers" or woodchoppers employed by the Government. Trees are seldom marked except for thinnings in stands at a very critical age or when some radical departure from the ordinary method is made. Mature timber is always clean cut and the men understand the ordinary thinning so well that occasional inspection of their work is sufficient. The art of thinning correctly is of great importance as 50 percent of the total yearly cut on a forest often comes from them. They are made every five to ten years in all stands after they are twenty years old. Woodchoppers are paid by the amount and character of wood produced and the difficulty of the work itself. They receive 2.00 to 5.00 marks (a mark is approximately 25¢) per day, averaging about 3.00 marks, while women receive about half as much.

In hilly country or where the market is poor, the trees are cut in the ordinary manner, stumps flush with the ground or three or four inches high. Where the market is good the interesting process of pushing the trees over is used in order to uproot the stump which is also sold. A stout pole about twenty feet long with a sharp iron point is placed at an angle of about 45 degrees against the tree to be felled. The point is jabbed into the bark to prevent slipping and the butt end is placed on the socket of a machine lying flat upon the ground. This resembles an ordinary lifting jack, working on ratchets, either with a long lever as the ordinary jack, or with a geared crank. A few roots are cut on the near side of the tree and then pressure applied by means of the jack till the tree is thrown over. Two such machines will easily throw over a two-foot oak or pine.

After felling, the top is lopped and together with the branches is worked up into the most profitable material. In order to prevent damage by insects which would soon riddle the wood, and in order to make drying more rapid, all conifers are peeled. The trees are dragged out to the nearest road by hand or snaked by horses, depending on the weight of the timber and the character of the country. On level ground "high wheelers" are effectively employed on large trees. The general practice is to snake out the entire tree, after trimming the branches off, and then work it into the different products on the road.

In scaling, the middle diameter of the saw logs and mining timbers is obtained with calipers and their contents given in "Festmeters" or cubic meters. Piled wood of all descriptions is measured in "Raummeters" (a "Raummeter" contains

about 0.7 of a cubic meter of solid wood or "Festmeter", and is equivalent to 1/4 of a cord approximately). Every sawlog, woodpile, or mining timber is stamped with a steel die with a number in figures about an inch high and its contents and description entered in a notebook. The material is now ready for sale and further work is not done by the Government.

A tree begins to be merchantable when one or two inches in diameter, such material finding ready market for use as beanpoles, vineyard stakes, or cordwood. Larger trees are made into pulpwood, cordwood, charcoal wood, mining timbers, poles, barrel-staves, etc. depending on the species and size. Small twigs and leaves are sold for a nominal sum, given away, or sometimes burned, depending on the distance to market. Stumps are sold as cordwood. Spruce bark is sold to tanneries. Practically no part of the tree is left in the woods unless the spot is far distant from railroads or towns.

The prices received naturally vary greatly and are difficult to compare with our own. The cubical measure is used instead of our complicated and cumbersome board foot system. All logs are graded into one or more classes depending upon their freedom from knots and straightness and different prices are received for different sizes. A log whose diameter is 24 inches will bring several times as much per cubic meter as one whose diameter is 10 inches. An oak log of the best quality 24" in diameter and 16' long is sometimes sold for as high as $60.00. The average price per cubic meter for oak over 60 centimeters in diameter is 140 marks, for that between 20 and 30 centimeters 85 marks. The average price of pine is 25 marks per cubic meter. Cordwood averages about 7 marks per rundmeter, or $7.00 per cord.

A complete system of roads is found in every forest. "Hauptwege" or main roads are found up every valley and if the ridges on either side are high, one or more run horizontally along the slopes, usually at distances of about a quarter of a mile apart. They are practically always macadamized in the valleys; are never steeper than 8 percent (usually 5 or less), and resemble the finest automobile roads in California. The main roads are connected by steeper "Verbindungswege" or connecting roads which are sometimes 12 percent or even more, not macadamized, but very well surveyed and constructed. In flat country the "Schneisen" or division lines between compartments from the roads and the "Hauptwege" are much farther apart. Such a road system is regarded as very essential in order that a favorable price may be received for the timber.

Wood is left in the Forest till Spring or Summer to become dry and light. It is removed by the respective purchasers who have either bid for large quantities or purchased smaller amounts in private sale. Cordwood, poles and small timbers are removed in wagons. Trees which are to make sawlogs are removed whole. They are loaded by canthooks or by a "crosshaul" with one horse, upon two pair of wheels which are placed at a varying distance depending upon the length of the material. For long 60 or 80 foot stems they may be 40 or 50 feet apart. The roads are so perfect that more than two horses are never required even for the heaviest loads. For a five-mile haul two trips a day are made, the load often being three or even four cubic meters.

German sawmills are as varied as our own. Large mills are very seldom seen, existing only in a few large lumbering centers. Some are very small. The mill is by no means rare where the owner starts the saw on a log and then milks his cows in time to prepare for the second cut. The most ordinary cut is a small water-power concern employing 6 to 12 men.

The timber, when it arrives at the mill, is stored in the yard till desired for sawing. The long stems are cut by hand to the exact length desired so that no trimming in the mill is needed. The logs are brought into the mill on small trucks or may be rolled into a pond and dragged in with the chain haul as is used in many of our mills. The saw works with a slow up and down stroke on the familiar "rangsaw" principle. One or more blades are used depending on the power available, though they are usually sufficient to make the desired number of cuts in a log without a second trip.

All logs are sawed through and through, since the amount of clear lumber to be obtained by turning is practically negligible. In fact it may be said that extremely little clear lumber is produced in Germany. Clear hardwood timber goes into veneer or high-priced furniture. Clear, soft-wood is mainly imported from Russia or the United States.

The most modern mills frequently edge their boards immediately after sawing, but the curious custom still prevails in most small mills or removing the log to the yard exactly as it was cut. It is there piled with thin stickers to dry. Such a yard presents a curious appearance with its "lumber piles" which at first glance appear to be piles of logs, but on closer inspection they appear oval instead of round and are seen to be unedged boards lying just as they lay in the log. Such piles are left till thoroughly dried

until an order is received for boards of a particular width and thickness when they are laboriously brought back to the mill and converted into the desired material.

As might be expected, an absolute minimum of wasted material is seen in the German mill. On the other hand, the loss in labor through poor methods and equipment is immense. A well equipped and managed mill is extremely rare and nothing compares with our establishments of the highest rank. Although we are far behind the Germans in the complete utilization of the timber, we may congratulate ourselves that we are equally far ahead of them in our method of exploitation and manufacturing.

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S I L V I C U L T U R E

There is a heavy crop of yellow and Jeffrey pine cones this year, but a long search had to be made before 2½ pounds of white fir, white pine and red fir could be gathered which was promised for experimental purposes. Ranger Babbitt had no trouble getting 70 pounds of Jeffrey pine seed which is 30 pounds in excess of the amount asked for by the District Forester.

Much to our surprise and gratification, the Bald Cypress seed planted at Rock Creek last Fall germinated and there are now quite a number of good-sized seedlings evident. It will be interesting to find out whether they will become acclimated or not. It would be great to have some cypress knees on this Forest.

The experimental plant conducted by the Office of Products at the Bloomfield Ranger Station is still in operation. We are indebted to Mr. Hunt for samples of oil distilled from sugar pine, yellow pine, incense cedar, and white fir needles and twigs, also sections of wood treated with various preservatives.

The cover picture shows some of the red fir lying just south of the Yuba Gap Ranger Station and which was covered by the reconnaissance party this Summer. This parti-

cular piece runs about 75,000 board feet to the acre. From all indications it won't be long until there will be a demand for this timber for pulp.

Nomenclature is generally a source of trouble with the ordinary individual. An argument recently arose concerning the general term "Yellow Pine". A lumberman claimed authority from hearing an expert talk on the matter. "Yellow Pine is divided into two classes", said he, "Yellow Pine and Ponderosa Pine".

In order to secure accurate figures on operating costs, a very detailed study of lumbering methods and costs is being made this season throughout the District on every Forest where timber sales are carried on. The work on the Tahoe has been concentrated on the operations of the Verdi Lumber Company, Davies Box & Lumber Company, and H. O. Nichols.

Specimens of white and red fir branches affected by a fungous growth were collected this Summer and sent to the District Office for identification. Dr. Heinecke identified the disease as a rust fungus (Peridermium columnare) or a related form, and stated that it has not, so far, been reported in America. One form of the disease on the west slope of the Sierras appears on the huckleberry.

Planting is now going on near Truckee and Forresthill, the yellow pine, sugar pine, and bigtree stock having arrived from the Pilgrim Creek nursery in good condition. Some seeding was done at the higher elevations where we have had our greatest success. A two-year old Jeffrey pine area examined this Fall at Corey Station, showed an abundance of seedlings which give every evidence of pulling through.

The series of studies of cut-over areas which was initiated last Summer has been carried forward this season. Our sale areas present many different forest types and special conditions, requiring different methods of treatment. A knowledge of the best methods of marking adapted to each particular case can only be secured through a close study of each area before cutting and at periodic intervals after cutting. A report on the condition of each area with reference to all the factors influencing reproduction, is made as soon after logging as possible and this is followed up by examinations made every three or four years.

There is a group of six Western Junipers, growing as shade trees at the home of Mr. Fred Plinman of Sierraville,

California, the largest of which is twenty-five feet in height and twelve inches D.B.H. The limbs are trimmed up about twelve feet, where the tree is eight inches in diameter and the spread of limbs is over twenty feet. The other trees are nearly as large and the group makes an excellent lawn shade. Mr. Blinman states that Prof. Lemon, who formerly owned the farm, planted these trees thirty years ago and that he experimented several years before he succeeded in getting them to do well. They thrived only after their native soil from the mountains, east of the ranch, had been hauled for them to grow in. These trees were loaded with berries and the seed required this year for experimental purposes was collected from them.

In the trip which the Supervisor and Rangers Babbitt and Noddin made over the eastern slope of the Washoe Mountains during the month of August, samples of what was thought to be Abies magnifica were secured and forwarded to Mr. Sudworth, as this tree had never been reported from that locality. It turned out, however, that the specimens were from the Shasta Fir (Abies shastensis) which was even a rarer find. Pinus albicaulis was also found on the summit between Lake Tahoe and Washoe City, at an elevation of about 9,000 feet. Samples were taken and the trees reported, as it was known to grow in this locality. Beautiful bunches of poison Larkspur were noted and collected, some of the spikes being three feet tall.

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I M P R O V E M E N T S

Under the supervision of Whittum, a house and barn are being constructed at Oak Valley RS.

A house was constructed at the Sardine RS and posts made to construct a fence in the Spring.

Guard Wills built a log barn at Tadpole which was needed badly. He also cut the poles for a lookout cabin on Duncan Peak.

King has built a dam to turn a portion of the waters of the North Yuba on the Ramshorn RS. Just wait until next Summer and see the crop of hay he raises!

Noyes has pipe enough to bring water from a spring to the house at the Tucker Hill RS. This will be put in next Spring.

A telephone line between Sugar Pine RS and Iowa Hill was completed in July. This line is approximately 9 miles long and is constructed of #9 wire. Another line between Foresthill and Yankee Jim was constructed in September. This line is about 4 miles long and is also constructed of #9 wire.

A two-room house and a good barn and corral were constructed under the supervision of Ranger McIntosh at Big Bend RS. This is the first Ranger headquarters to be built in this district and McIntosh and Bill Campbell now have a happy home away from the noise of Emigrant Gap.

We have received five portable phones from the Property depot. The bayonets can be used for spearing bear when not in use as ground rods. Don't use it for a spit to fry your steaks as it will draw the temper and spoil the spear as a weapon.

Guard Howe on Banner Lookout moved into his new 10x12 cabin in September. It was necessary to construct this small cabin to store tools and protect Howe from the early and late rains, and his kitchen from stray cows and sight-seers. Noyes was head carpenter.

A telephone line between Hall's Ranch RS and Scales, a distance of approximately 10 miles, was constructed of #12 wire. This line connects Mt. Pleasant and Scales with Camptonville and Nevada City, and ends close to the northern boundary of the Forest. An iron lookout phone was placed on McMahon Ridge, the lookout point for the Brandy City country.

A telephone line between Bloomfield and Camptonville via Miller's Ranch a distance of 21½ miles was completed in September. The line was constructed of #9 wire and connects Martin's Camp, Miller's Ranch RS, Oak Flat lookout, and Camptonville with Nevada City. A ten-point switchboard has been installed at North Bloomfield.

The telephone line between Camptonville and Pike County Peak Lookout, which will connect with the present line to Challenge, is now in course of construction and if weather permits will be completed during this month. The line is being constructed of #12 wire and will be about 9 miles long, connecting Ranger Gleason's headquarters and the Pike County Peak lookout

with Camptonville and Nevada City. A five-point switchboard will be installed at Camptonville.

A new telephone line between the Truckee RS and Truckee, a distance of 3½ miles, was completed in September. A line between the Truckee RS and Shafer Hill, a distance of six miles, was completed on October 15. A line between Squaw Valley RS and Beartrap RS was completed by Donta and Overmeyer in September. The telephone line between Martis Lookout and the Brockway Road telephone box, was constructed by Overmeyer and James Poore during August. These lines were all constructed with #8 wire. An iron lookout phone was installed on Martis lookout. By the construction of these lines, the Ranger at Truckee RS has direct communication with the Crown Columbia Paper Company's patrolmen, Kent's RS and the resorts on our Lake Tahoe telephone line. Twenty-eight miles of line between Truckee and Sierraville to be constructed next year will connect this system with the District Ranger at Sierraville.

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H E A D Q U A R T E R S N E W S

The register on Banner Lookout showed that 1340 persons were on the tower this Summer.

Assistant Ranger James J. Poore was transferred to the Mono Forest on August 24, where he was given a statutory position. Later he was transferred to the Trinity Forest.

Forest Clerk LaRue returned from the District Office on October 3 after a detail of over two weeks. From all accounts, our Accounts will be better accounted for on account of the visit of our Accountant to the Office of Accounts.

Forest Assistant Coulson, who has been engaged in reconnaissance work all Summer on temporary detail, will be employed on planting at Rock Creek the greater part of November.

A joint Ranger Meeting of the Eldorado and Tahoe forces will probably be held at Nevada City in January, the exact date to be determined later on advice from the District Forester.

Swift Berry, Forest Examiner from the District Office, made an extended trip in October visiting the timber sale and planting areas on the Forest in company with Deputy Supervisor Pratt.

J. Alfred Mitchell, Forest Examiner from the District Office, was on the Forest the first part of November, his object being to gather growth figures on sugar pine and cedar in the vicinity of Camptonville and Bloomfield.

C. Stowell Smith from the District Office recently visited the emperimental plant at Bloomfield and agreed to give the inhabitants of that place the extra treated posts for fencing. He did not have the hard luck with fires that he usually has on the Sierra, although we tried hard to find one for him.

Deputy Supervisor F. H. Hafley, who is the specialist in this district on telephone work, is on the Forest looking over and standardizing our telephone system. Assistant Ranger Norwege of Bloomfield accompanied Mr. Hafley on the majority of his trips, the idea being to make him the telephone trouble hunter for the Forest. Mr. Hafley is now in the Forresthill district and will shortly complete his work on this Forest.

The Gold Lake Road is now an assured fact. The Forester has allotted $4000 as our share in the work and, with the $4000 set aside by Sierra County, there will be a sufficient amount to construct the eight miles of road necessary to connect with the road built by Plumas County. By means of this road the distance to Sierra City, Downieville and other pointsn in Sierra County from the Western Pacific will be greatly lessened.

Assistant Ranger George H. Poore, while gathering white pine cones, fell from a height of forty feet. He was able to get to his station, but fearing that he had suffered internal injuries, went to San Francisco to consult a specialist. He has now practically recovered from the effects of his fall, and is at Sierraville on grazing work. His salary for the 37 days absence from duty will be paid under the Compensation Act. Under the old regulation he would have lost 7 days' pay.

Ranger Whittum submitted the following succinct account of some "doings" in his district:

"On Sunday, August 25, six Chinese from Camptonville gave a feast to their departed dead in the Camptonville cemetery west of town, leaving their fire unextinguished to keep the devil away. I extinguished their fires and arrested them, and took them before Justice of Peace Frazer. Ah Sing plead guilty, as being the leader of the affair, and was fined fifty dollars, which he promptly paid."

The second trespass case against the Blue Channel Mining Company was settled without trial on a wilful basis, settlement being made for damages in the sum of $151.32 and $57.25 costs, by the President of the Company. This trespass occurred in the Fall of 1910 upon the Polo Claim which was located adjoining and below the channel being worked at the Bunker Hill Mine expressly for the purpose of obtaining timber for use on other claims not connected in common with it, and incidentally as a dumping ground.

The first cutting was settled on an innocent basis, it being assumed that the trespasser cut timber without full realization of his error. The refusal of the Superintendent of the Company to settle on the occasion of the second trespass, however, caused it to be placed in the hands of the United States Attorney General. The President of the Company was summoned to San Francisco to appear before the United States Court, but before any pleadings had been made to the complaint, he made full settlement to the United States District Attorney for the value of the finished material where found, and the timber left on the ground in top logs.

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A Little of This, and a Little of That

Ranger Wilson recently had cause to celebrate the arrival of an eleven pound boy at his home. If no other name has been selected, ye Editors humbly suggest "Woodrow".

Leander used to swim across the Hellespont in order to see an affinity on the further shore. No attraction of this kind was required by a certain member of the Truckee District telephone crew who swam the Truckee River with a rope attached

to a wire.

Mount Lola near Webber Lake was named in honor of Lola Montez, the celebrated Spanish dancer, the greatest of her day. In the early days she visited Downieville, which was then one of the great gold camps of the State. After her tour of the United States she married the crown prince of Bulgaria, and her descendants are now probably making it hot for the Turks.

Jasper Hunt, camp tender for Jim. Freeman, trapped nine cinnamon bear this summer with one mule as bait. Jasper's mule thus proved as faithful in death as in life.

Assistant Ranger George L. Poore made a large collection of the forage plants around Webber Lake this Summer, which forms a welcome addition to our herbarium. Quite a number of specimens were sent in during the Summer by the Forest officers.

When McIntosh and Mills were camped at Soda Springs this Summer, the former's faithful saddle mule, after drinking copious draughts of soda water, left camp during the night, for the first time in its career, and was several miles towards Emigrant Gap before it was recovered. If soda water has this effect on a mule, what would be the result of giving it something stronger? We leave further investigation along this line to the Bureau of Animal Industry.

The Gold Lake region is rapidly gaining in popularity as a Summer resort. During the Summer the boundaries of the Government land near the Lake were run out in order to determine the amount of National Forest land available to meet the increasing demand for special use in that locality. Two special use permits have recently been granted for resorts, one near Gold Lake and one on Sardine Lake. With the opening up of the Gold Lake wagon road a great impetus will be given to summer travel in this region.

The Editors are very glad to get Mr. Gallaher's article which was promised before he left on his trip. Some liberties were taken in publishing the extract from a letter from him in the last issue, but it was thought that the topics treated, though unrelated in character and not intended for publication, would interest everyone on the Forest, and this proved to be the case. Mr. Gallaher is in India now and we hope that the temple bells and heathen idols made of mud will

not so engross him but that he will tell us something about forestry among the Hindoos.

How is this for a hard luck story: --

During the month of August the Sierraville RS pasture and barn was turned into a horse-pital. Assistant Ranger Joy's saddle horse sprained a knee and his pack horse was cut by a wire fence, so that both were laid up for repairs. Babbitt's driving horse was so badly cut by barbed wire that he will be of no further use this Summer. The saddle horse got a sore back, a mule got the scratches, and the hard-luck mare broke a leg and had to be shot. Rumor has it that the bucking colt pressed into service by Joy while his other horses were laid up, has made feather pillow upholstering the style for chairs at his home

The following is an extract from an early day classic found in the archives of this office:

"Your gracious epistle of the 7th instant was duly received and its contents carefully noted.

It would be a great pleasure and honor to serve as Ranger on the famous Tahoe Forest but because of unforeseen and unavoidable circumstances, it seemed wise and proper to the United States Civil Service Commission to grant me, some weeks ago, a temporary suspension of eligibility until some time in June.

Regretting my present inability to be of service to my dear Uncle Sam, I remain -- etc."

It is related of "Red Dog" that in the early days when it was rich in gold but poor in all else, the town boasted of quite a population, and wanting to receive and forward mail, they established a post office. The only article they could find in camp with which to stamp letters was an old cut of a dog. It was decided to use this stamp on all the letters and its use, with red ink, finally lead to the adoption of the name "Red Dog".

When the Ranger's Feet Get Cold

In the Spring the Ranger's feet begin to tingle and get warm
For the "Wanderlust" is on him, and he feels the mountain charm.
The birds are singing gaily, and the hills are getting green,
And he knows the trout are leaping in every mountain stream.
The days are getting longer; the flowers are all in bloom,
So what's the use of waiting in some stuffy Ranger room?
He gently sounds the "Boss" on the subject near his heart.
Has he "Heard how long before Brown's sawmill 's going to start?"

He talks about the brush that he was going to burn last Fall,
And wonders how his fences are, and if they're down at all;
And how his cabin stood the snow, and if it needs repair;
And about the trail he'd like to "brush" if he were only there.
He overhauls his outfit half a dozen times a day,
Till the "Boss" takes pity on him and sends him on his way.
For the "Wanderlust" is on him, and he feels the mountain charm,
And it's hard to hold a Ranger when his feet get warm.

The summer passes quickly -- the Ranger 's on the go,
He dreads the thought of Winter when he'll have to move below.
He gets his share of pleasures, as well as plenty work,
For a Ranger's jobs are many, and he 's seldom known to shirk.
He feels at home in cattle camps, the tourists are his friends,
"And I don't care a rap", he says, "if Summer never ends".

For his feet are warm and tingling, there's music in the air,
His home is where he hangs his hat, and he doesn't have a care

But along about November there comes a sudden change,
The sheep are moving southward; the cattle leave the range.
And the Ranger feels a longing, and his thoughts begin to roam,
And he dreams about the office, and the dear ones all at home.
His mind is busy scheming how he 's going to get "called in".
The "Boss" has sure forgot him, and he thinks it is a sin.
The "Wanderlust" has left him, and he doesn't feel so bold,
For he's like all other mortals when his feet get cold.

-- A. R. IV --

T H E T A H O E

(A Quarterly Publication)

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E d i t o r i a l

The true value of things is best realized when viewed in retrospect. Now that we have settled down to our regular duties again, we have ample opportunity to size up calmly and judiciously a recent momentous event. The Rangers Meeting, as George Ade, the philosopher in slang, would say, was "All to the mustard", "A Pippin", or "Lollapalooza".

The Rangers were there with their thinking caps on, and absorbed wisdom like sponges. But withal, they were not clams. They opened up at every opportunity with a rapid fire delivery, and generally the queries had weight behind them. Progressivism was in the air along with the tobacco smoke, the amount of which was a good index of the hard thinking going on. We are proud of the bunch. The mentality and ginger it displayed argues well for mighty good work on the Tahoe the coming field season.

The Meeting was not cut and dried, and therein lies the secret of its success. It was everybody's look in. The District men were entirely in harmony with the feeling that prevailed. The District Forester started things off right with a talk that made everybody sit up and take notice. It was characteristic of Mr. DuBois, straight to the point, and it found its mark.

Mr. Meinecke had the boys with him from the start and that is saying something when it comes to fungi. Mr. Barrett had a stranglehold on his subject. Mr. Woodbury came down to brass tacks in his talk, and Mr. Hatton was right there, as usual, with a convincing and well thought out ex-

position of his specialty. The District men are all right!

So there is nothing in the retrospective view that gives us any regrets. It was the best Meeting we ever had. May we ever have the same spirit in the Meetings to come as characterized this one.

The Limit of Efficiency

Man's work often outruns the capacity of the individual man; and no matter how good the organization, the capacity of an individual man usually determines the success or failure of a particular enterprise -- not only financially to the owners, but in service to the community. Organization can do much to make concerns more efficient. Organizations can do much to make larger units possible and profitable. But the efficiency even of organization has its bounds. There is a point where the centrifugal force necessarily exceeds the centripetal. And organization can never supply the combined judgment, initiative, enterprise and authority which must come from the chief executive officer. Nature sets a limit to his possible achievement. As the German says: "Care is taken that the trees do not scrape the skies".

---- Louis D. Brandeis.

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Work

Work we all must, if we mean to bring out and perfect our nature. Even if we do not work with our hands, we must undergo equivalent toil in some other direction. No business or study which does not present obstacles, tasking to the full intellect and the will, is worthy of a man.

---- William Ellery Channing

C O N T R I B U T E D A R T I C L E S

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Remarks and Suggestions on Grazing

By

George E. Poore

There is a great deal of inquiry by grazing men why the Forest Service does not send depleted ranges and barren areas. We can say we have not reached the experimental stage and I think it would prove a very expensive undertaking considering the small grazing fee charged. On this Forest there is much patented land, railroad and private. Naturally the best grazing areas are patented, so it is up to the permittee to do most of the seeding at any rate.

While we have no data of the number and kind of stock grazed upon these ranges years before the inauguration of the Forest Service, we are informed by stockmen of that time, among whom some are present day permittees, that the ranges then produced much more feed and supported more stock. This year a permittee told me that forty years ago his present range would support many more sheep than it was now doing and that other ranges he was familiar with presented the same conditions. He explained that upon certain portions of his range he had not grazed for one or two years and that it had not improved it to any appreciable amount. To a great measure this can be accounted for. The principal forage in the locality consists of herbaceous perennials, which at the altitude, require three years or more to reach a state of valuable productiveness. This permittee and others realizing the fact that there is no plausible reason why their permits will not be granted indefinitely, so long as they abide by the rules and regulations of the Forest Service, are looking forward towards increasing the forage of their range, as well as to increase the number of stock grazed. They would purchase seed and do seeding themselves. They ask,

What shall I plant? What is best to plant, all things considered? etc. etc. There has been some experimenting done by a few permittees, but with little success, generally due to methods employed, carelessness and lack of time. From talks with some grazers I have concluded that some anxiety begins to arise concerning the future carrying capacity of their ranges.

The following remarks are intended merely as suggestions which it is hoped will be helpful in solving methods applicable to the Tahoe: Careless and unintelligent experiments should be discouraged. They lead to indefinite conclusions and failures will discourage others and will retard progress in increasing the productivness of the range along this line. Therefore I believe experiments should be conducted by the Forest Service at ranger stations when such ranger station is so situated as to compare geographically and meteorologically with a certain grazing district.

Experiments should be conducted by Rangers. Economical and practical methods should prevail. Desired information can be had from the Department of Agriculture and other sources regarding adaptibility of a species and method of carrying on experiments. Several different species should be experimented with during the season. I believe they should be conducted under most suitable conditions at each ranger station, or not at all. Careful selections of plot, cultivated, seeded at proper time with tested seed, and ample protection and care afterwards. Experiments should continue for two years for annuals; three or more for biennials and perennials. At the same time experiments should be conducted in a different manner by simply sowing the seed broadcast in average ground where it can be grazed and let it take care of itself. This will prove of economic importance. 6 to 10 pounds of seed of a species would be sufficient. Any Ranger who is any agriculturist at all can conduct these experiments and keep a record and necessary data. Much study should be given the enterprise. It is an easy matter to gain valuable information from literature and correspondence regarding successful culture methods and other reliable data. The aim is to avoid unprofitable preliminary experimenting. Once we have been successful with a species we can call in these enterprising grazers and show results. It will serve as a significant hint to those who have ambition and courage to select an area upon their range and carry on culture methods in a more practical manner. We can instruct them in methods employed, requirements, etc.

The high price now obtained for beef, mutton, hides and wool is an incentive for increasing thecarrying capacity of a range. An interest must be created first. The Forest Service will have done its part in conducting the experiments. If it is to be done it should not be delayed. It may take several years to prove its worth and for reasons already mentioned experiments should be conducted by the Forest Service. While it is the general desire to experiment with valuable forage of other states and lands, our native herbs and grasses should not be lost sight of. It is hard for a keen observer to make accurate and reliable observations on the range with a view of recording facts. A wise move would be to experiment with important species at ranger stations along with other species under favorable conditions and deduce the cold facts.

These remarks and suggestions are chiefly meant to apply to those ranges situated at or near the crest of the Sierras; at the headwaters of the rivers where there are numerous basins and meadows.

Some information regarding soil, climate, etc. will be briefly stated. The grazing periods are short ow ing to the heavy snowfall. Vegetation puts forth as soon as the snow melts and ordinarily matures rapidly. The nights are cold and frosty. There are few hot days, but many windy ones. In distances of 10 and 20 miles the changes in climatic conditions are highly remarkable, principally due to altitudinal variations most noticeable towards the west. South and east slopes are the most productive, though this does not always hold true. The principal soil of the Forest is andesite and rhyolite lavas in various stages of decomposition. The former predominates by great odds. Many analyses made in different parts of the Forest show that the mineral salts essential to plant life are quite constant.

These lavas rest on other igneous and sedimentary rock, mostly upon sedimentary, which predominates in the whole region. Exposed areas of sedimentary rock that have been weathered and decomposed usually furnish soil of poor quality unless there is associated with it lava and decayed organic matter. Masses of igneous rock often are good grazing areas. An example might be cited of a well known land mark, English Mountain, which is a good sheep range, especially the eastern slope. In many instances large masses of granitic rock are rapidly disintegrating. The result is good soil, either remaining in level and protected places or carried by some agent into crevices and depressions producing good vegetation and a multiple of varieties. Some stockmen explain that the reason

vegetation is less abundant than in former years is due to close yearly cropping and no decayed vegetable matter to enrich the soil. There is no doubt regarding the truth of this statement, but to what extent we do not know, especially upon these ranges.. There remains enough undecomposed soil to furnish the earthy constituents indefinitely. It seems then the principal value of this organizable matter would be its nitrogen content which is readily assimilated when supplied in proper combinations.

They also say that the trampling year after year has a harmful effect. This I do not believe holds good upon the upper ranges unless the trampling has been excessive as in corrals, etc., for it is offset by freezing and thawing which takes place many times during a season. There is trampling that does do harm and that occurs when stock are upon a range too early, especially sheep. The flora is varied. As soon as the snow melts some put forth while others are at various stages of germination when grazed at this stage, and if the soil is clayey and plastic it will become so packed as to partially suppress the vegetation already advanced, and almost wholly the rest that has not started, thereby furnishing little vegetation for a second grazing. Much can be said on the subject. It is hoped that others will give their views, those longer in the Forest Service and more capable to enter into details and give facts.

A Method of Estimating Range Carrying Capacity

By

Frank A. Wilson

The question of how to estimate the carrying capacity of a range has been the theme of considerable discussion. Last season the District Office sent a circular letter to the Supervisors asking them for special reports along this line from Rangers, on well known ranges, with a description of the systems used in obtaining data for these reports.

From the reports received it was found that each Ranger used some system of comparison. Then the questions

arose, What is this comparison? How can it be described and standardized?

In the past we have submitted grazing reports at the end of every season showing the carrying capacity of each range, estimated by different systems, figured out from the amount of stock actually grazed, condition of range after being grazed, and comparison with other well known ranges.

The average ranger can estimate the carrying capacity of a range very closely, but when he is asked how he did it or how anyone else should be instructed to do the same work, he thinks a while and gives it up. Some say that grazing reconnaissance cannot be done accurately until the forage value of each plant is known. Others say it cannot be done by anyone who has not had experience in stock grazing.

Admitting that the known value of each plant would be of some value, it is not absolutely necessary to have this knowledge for range reconnaissance when several different plants are considered together as a type. It is also a demonstrated fact that some of the best grazing reconnaissance is done by men who never herded sheep for a living.

After considering the different classes of forage on the Tahoe Forest we decided to standardize our reports by dividing forage into a few well known types. The types adopted were as follows: Good Browse, Medium Browse, Good Grass, Medium Grass, Meador and Sage Brush. The next step was to make a grazing legend with a color for each type, and waste brush and barren areas where there is little or no feed. This gives a standard method of mapping ranges and a chance to estimate the area of each type in a range. Then by comparison, the keynote of range reconnaissance, we can take the known carrying capacity of known sections of a type and ascertain what that type should carry on each section, in untried ranges.

If we have no idea of the carrying capacity of any particular type it is easy to have a section grazed with a given amount of stock and ascertain the time that it takes to feed it. Under the old system we estimated that a section would carry a certain number of stock for the season. Under the new system we estimate how long a section will carry an average band of stock. Under the old system we might ask every stockman we meet how many stock a section would carry for a season and always receive the same reply "I don't know". Under the new system we can ask the stockmen or herders how

long a section will carry one band of sheep and immediately receive the reply that it took so many days to feed it.

When we know by actual grazing how long a section will carry a given amount of stock we have accurate data for comparison with unfed ranges to get their carrying capacity.

Then comparing the value of one type with another we have definite data to estimate the carrying capacity of any range in that vicinity. We fully realize that the types used in this system and their forage value might not apply to other Forests, but think that the theory of estimating by feed types and by the number of days feed per unit is sound and can be applied under any conditions.

Porcupine Devastations

By

W. H. Babbitt

It occurs to me that some among the enemies of our trees are not getting their fair share of advertisement.

Porcupines are doing an astonishing amount of damage to reproduction and young timber on this district and I would like to stir up all of our force against these pests. I am sorry to report that at least one of these animals was spared by a Forest officer this Spring because he looked so "helpless and innocent". Most guilty parties do not look the part, but that is a poor reason for letting them off. I think it the plain duty for every Forest officer to kill one of these animals whenever an opportunity offers.

I have kept watch on porcupine work all Summer and have noticed fifty young trees, averaging thirty feet high and 10 inches D.B.H., that have been killed or ruined along the Lemon Canyon road this Spring. I have also noticed that the damage is usually done to trees growing in openings, where no doubt the bark, owing to the extra amount of sunshine, is sweeter and where from our standpoint the reproduction is most desired. It is very aggravating to ride over an old burn that seems to be re-stocking when viewed from a distance, only to

find that 90% of the trees have been ruined by porcupines.

While riding between Jackson Creek and his camp at Webber Lake last Fall, Assistant Ranger G. E. Poore counted 540 trees that had been killed or ruined by porcupines during the Spring and early Summer, and these conditions exist over the greater part of this district.

These animals, as most people know, travel and feed at night and it is only by luck that one runs across them during the day, unless he has a dog that will hunt them up, but if those of our rangers that sport dogs would give a little of their time to hunting them in the Spring when they first come out, I believe that the time so spent would be more than justified. If you value your dog, caution should be used in setting a pup to hunt porcupines. Forest Guard Marden's shepherd will probably die from the effects of a brush with one of these animals. Most dogs, however, soon learn to bay the porcupine without mixing it, and if attention is paid to them when they bark about a willow thicket, one generally finds a porcupine and a little encouragement will keep the dog hunting. Mr. G. E. Poore has killed quite a number of porcupines with the assistance of Sharkey, his collie dog, and has never had to pull a quill.

Porcupines could be poisoned. I have had them come to salt bacon rinds nailed to trees, but I do not think this means should be resorted to, as squirrels and many birds will also take the bait and when one sets out poison, he never knows where the damage will stop.

Some day the Service will hire hunters and exterminate these animals, but in the meantime let us do our best to protect the trees when the opportunity offers.

Porcupines have sadly misled some of our technical men in the past and may continue the demoralizing practice in the future. One young technic, examining a sheep driveway, reported that sheep were damaging reproduction by barking them, in some cases even climbing into the lower limbs to do so. Luckily he did not notice the barked places 20 or 30 feet above the ground.

The Himalayan Forests

By

Wm. H. Gallaher

When a Californian ascends the outlying hills of the Himalayas and reaches the region of coniferous forests he is first impressed by the remarkable similarity in altitudinal types or timber belts to those of the Sierra Nevada mountains. This is even more striking when he examines each tree species and correlates it with some corresponding tree of our mountains. This resemblance is so close that a brief comparison will give a fairly accurate picture of the mountain forests of northern India.

The traveler as he approaches and climbs the first range of Himalayan hills passes through a hardwood zone which may be said to roughly correspond to the outlying oak, chaparral and digger pine belt of the Sierras. He then enters the chir pine (pinus longifolia) belt. This tree is very similar to yellow pine having a straight clear bole, long needles, three to a fasicle, yellow bark, medium sized cones, and grows in open stands which look much like the mature yellow pine forests of the Sierras. It usually occurs in pure stands or in mixture with Ban (Quercus incana) Aiyar (Pieris ovalifolia) and Burrans (Rhododendron arboreum).

Above the chir pine lies the deodar (Cedrus Sibani) belt. While there is no tree in the Sierras which corresponds exactly to this species, kail pine (Pinus excelsa) is usually found mixed with it. This pine is almost an exact replica of the sugar pine having five needles to a fasicle, long horizontal branches, drooping cones, grayish brown bark and soft, easily worked wood. Its most noteworthy characteristic is its reproduction which unlike sugar pine comes in so densely and is so well distributed as to almost exclude the more valuable deodar. The deodar belt may, then, be said to correspond to the sugar pine zone and the deodar which has easily worked, aromatic, and extremely durable wood may be likened to the incense cedar though there is no outward resemblance between the two. In the upper part of the zone the kail pine gradually gives way to spruce and fir, the deodar considerably outranging the pine especially on cool

north slopes which prove favorable to spruce and fir in India as well as in our country.

At about 9500 feet elevation the deodar gradually disappears and the fir or spruce type makes its appearance. Fir (Abies Webbiana) and spruce (Picea morinda) are the chief components of the type which may be likened to the red fir belt of the Sierras. At present it is a virgin selection forest unmerchantable on account of inaccessibility. At 10,500 to 11,500 feet it gives way to the Kharsu (Quercus semicarpifolia) belt which has no prototype in America, and strange to say is composed of a thick leathery leaved evergreen oak occurring in heavy moss covered stands of no practical value.

The chir pine type is managed under the shelterwood system which has been found best adapted to intolerant species of this character. The timber is removed in two to four cuttings, the number depending upon silvicultural needs and logging conditions. In case four cuttings are made 15 to 20 trees per acre are left after the first cut, 6 to 8 after the second, 1 to 2 after the third, and all removed on the fourth. This number is necessary on account of fire danger, two cuttings being all that are necessary for reproduction. The second cutting follows the first after about 4 years while the two remaining ones remove the shelterwood when the fire danger has lessened, i.e., when the young trees are large enough to resist fire. The policy at present is towards a reduction in the number of cuttings since fire, when it does occur, is usually so fierce that old as well as young trees are destroyed. Under this policy 7-8 trees per acre are left after the first cutting. Light burning is systematically carried on over large areas in order to improve forage and to protect the tracts being regenerated.

The cover picture shows the excellent character of reproduction secured. Originally about 14 trees per acre were left on this area, the second cut having been made two years ago leaving 2-3 trees per acre. Reproduction at present is 15 years old. In the background can be seen the steep mountain sides which have been systematically terraced by the natives with what must have been an immense expenditure of labor. These terraces are irrigated and yield good crops of rice, wheat, dhal, and other grains.

The deodar is much more tolerant than the chir and since it occurs scattered through the forest associated with kail, fir and spruce, a group selection system is unavoidable

since fir and spruce are under present market conditions unmerchantable. The felling cycle or period in which the entire forest is cut over is usually about 40 years. Therefore each working circle is divided into about 40 compartments, one of which is cut over each year. Branches are sometimes piled and burned in this type whereas in chir pine the tops are merely topped. Kail pine gives much trouble since it grows much faster than deodar especially when young. Systematic cleanings are made every ten years and all kail which is suppressing healthy deodars is cut down or girdled or if not directly above is pruned of branches to a distance of 6' to 8' above the top of the deodar. Where other trees are found interfering with either deodar or kail they are cut or girdled. Formerly cleanings were very heavy, but the present policy is more lenient towards kail which grows much faster than deodar though not producing so valuable a wood. On the whole kail would be an excellent tree to plant in all sugar pine sites in the Sierras and for this reason is a most interesting tree to the American forester though looked upon with disfavor in India.

Most forests are well covered with an excellent system of trails. These are very well constructed, many in fact being almost roads and are used as export roads for timber. The trees are sawed by hand in the woods into railroad ties or long dimension stuff which is carried to the nearest drivable stream on the backs of coolies who earn 4 to 6 cents per day. A drivable stream, however, need contain very little water since a method of driving called telescopic floating is employed. Any stream may be driven no matter how steep provided 100 to 150 miners inches of water are available. A rude trough is constructed of ties laid down in the bed of the stream more ties being continually floated down to form the front end of the flume. When the entire amount to be exported has thus been built into a rough trough the rear end is taken up and floated down to be added to the front end and so on till a large stream or river is reached.

Fire lines of two kinds are made, first, narrow lines 10 to 30 feet wide along well traveled trails and secondly large lines 100 to 200 feet wide along the crest of ridges. These must be gone over every year, the grass cut and burned and the the reproduction cut out.

Grazing is an important factor on most forests. A very successful system is employed in handling sheep and goats

in connection with the regeneration of cut-over areas. Every cut-over area is first heavily grazed for 2-3 years, the sheep tearing up the ground and trampling down the dense undergrowth. Then the area is closed to grazing and reproduction has an opportunity to come in. In about 7 years the area is again opened to grazing, the brush and grass which has accumulated is again trampled down, and spots which did not successfully seed the first time have a second opportunity. This alternate opening and closing of the area to grazing is continued till the whole tract is successfully regenerated when grazing is allowed continuously though not so heavily as when for the express purpose of repating a suitable seed bed.

Other problems such as fire, game protection, supervision, patrol duty and the like are handled in much the same manner as in this country, though much work is possible with their cheap labor which would be impossible here. Ordinary day labor costs 3 - 10 cents per day and forest guards receive $3.60 to $5.00 per month. This makes it possible to employ a large force at a minimum expense, and the result is clearly seen in the intensive methods of silvicultural cleaning, fire break construction, trail building and logging methods. Nevertheless one can probably gain a clearer impression of the character of the work that will prevail twenty years from now in our own forests by a short visit to India than anywhere else in the world.

Forest Assistant Gallaher while digging among the office archives recently made the discovery that the creation of the Tahoe dates back to the days of Forty-nine. The first timber reservation was made in the vicinity of Verdi, Nevada, before Lincoln was President, and was entitled a United States Timber Reserve. The timber in this reservation was held for the use of the troops stationed near Reno in the early days when the presence of hostile Indians demanded a large protective force in this vicinity. Since no record of large fires or insect depredations on this area has been found in the office we conclude that the efficiency of the Forest staff must have been near 100% and Supervisor Bigelow has been wondering what patrol methods and cost keeping system were in effect to produce this excellent record.

Forest Sanitation

By

John S. Boyce

In the broadest sense a tree disease may be defined as any disturbance of the normal functions of a tree and this may be caused by fungi, mistletoes, insects, impoverished condition of the soil, poisonous gases in the air, and numerous other agencies. However, for the purposes of this article, fungi and mistletoes alone will be considered as the cause of tree diseases.

Forest tree diseases caused by fungi and mistletoes may, from a practical standpoint, be divided into two classes -- first, those which destroy our present capital of timber and second, those reducing our future capital. Both chsses of disease vitally affect our revenue from the timber on the National Forests.

The timber on the Tahoe National Forest affords excellent examples of both classes of disease. Among the diseases destroying the present capital of timber may be mentioned the stringy brown rot of white fir caused by Echinodontium tinctorum (the Indian Paint fungus), the dry rot of incense cedar caused by Polyporus amarus, the dry red rot of yellow and sugar pine caused by Fomes laricis (the Chalky Quinine fungus), the red butt rot of western yellow pine and Douglas fir caused by Polyporus schweinitzii, and the white pitted rot so common in Douglas fir and western yellow pine caused by Trametes pini (the Ring Scale fungus). This last is also found in sugar pine. There are certain other tree diseases which destroy the present capital of timber by actual killing of the trees, but as yet none of these have proved to be of any importance in the mountain pine forests of District 5. Such a disease, however, threatens to entirely eradicate all the chestnut trees in the east.

The diseases mentioned are all more or less represented on the St. Gothard Gold Mining Company's sale near North Bloomfield and an idea of the actual loss in dollars

and cents caused by such destroyers of our present capital of timber may be obtained by working up Deputy Supervisor Pratt's figures on this sale. He estimated the timber on a cutting area of forty acres and applied a cull per cent, this being 10% for yellow pine and 20% for Douglas fir, white fir and incense cedar. Now at the stumpage rates in the contract ($2.50 for yellow pine, $1.50 for Douglas fir, and $1.00 for white fir and incense cedar), the loss would amount to $252.00 for the entire forty acres or $6.30 an acre. The figures are, of course, based on estimate but they are at least suggestive.

The reduction of our future capital of timber, on the other hand, is not so tangible or self-evident to the casual observer, but it is a factor that is none the less to be reckoned with and one about which we, as yet, know far too little. This reduction of the future capital of timber is caused by a reduction of annual growth in a tree or stand. Such a reduction is, without a doubt, brought about by a certain forest fungi and the mistletoes which, while they do not actually destroy the wood in a tree, sap its vitality to such an extent that it cannot make the growth of which it is capable under healthy conditions. Among the fungi causing such conditions on this Forest may be mentioned Gymnosporangium blasdaleanum producing the witches brooms on incense cedar, Peridermium sp. forming the pronounced swellings on the branches of various species of pine, and the fungus which is partially defoliating as many of the lodgepole pines in the neighborhood of Lake Tahoe. The mistletoes, while they are not fungi, certainly sap the vitality of any tree on which they occur. The true mistletoes, (Phoradendron sp.) are found commonly on oak and sometimes on incense cedar on this Forest. The false mistletoes (Rhazoumofskya sp.) are common on western yellow pine, lodgepole pine, and other conifers, and are of course well known to every one. Even the manzanita is not exempt from mistletoe attack since Phoradendron flavescens, the common mistletoe on the oak, was found gowing on a manzanita on the road between Nevada City and North Bloomfield.

A study carried on by Dr. Heinecke near Lake Tahoe in the winter of 1910 showed that loss on lodgepole pines infected with a needle disease actually amounted to 63% of the needles. Since the foliage of a tree is the "factory"

in which the raw food is worked up into the proper form for nutrition and storage, it can readily be seen that such a serious loss of foliage must be followed by a severe lessening of the food supply of the tree and a consequent decrease in the rate of growth. Sections from a western yellow pine pole infected with a needle fungus on the Trinity illustrated this to a nicety. The tree had been suffering for the last seven years. During the seven years previous to the attack of the needle fungus, a growth in increment of approximately .85 inches in diameter was made while for the seven years during which the tree was diseased the growth was only .3 inches. When such a disease is prevalent in a large stand the actual loss of increment each year will be considerable.

Now you are doubtless beginning to ask, What can be done about this? A start has been made in the introduction of the Forest Sanitation Clause which was first incorporated into a timber sale contract on the Sierra National Forest in the latter part of 1918. The clause has been modified since that time until it now reads as follows:

"In order to check the spread of forest tree diseases and to eliminate from the forest snags and dead trees which are a menace in time of fire, we agree to cut all trees marked for cutting and all snags or dead trees upon the cutting area whether merchantable or apparently unmerchantable.

Trees felled under the above clause shall be opened up sufficiently to satisfy the Forest Officer in charge of their condition and any portion of such trees which are merchantable in the judgment of the Forest Officer shall be removed from the woods, scaled, and paid for."

This clause makes it possible for the Forest Officer marking a timber sale to remove all diseased trees down to a certain diameter limit, and old snags, thus leaving the cutting area in a fairly healthy, sanitary condition when the sale is completed. Old snags, besides being a serious fire menace, are veritable breeding places for wood destroying fungi and insects and should be removed under all circumstances. This stipulation in the contract makes it possible to cut out all diseased trees even if they do not yield one log. Such trees are a constant menace to the future stand and should be removed.

Ranger Babbitt has devised a method which he describes in a recent issue of the Tahoe, of getting rid of old snags which certainly is an advance in fire protection and forest hygiene. It is probably not generally known just how closely fire protection and forest hygiene are inter-related. Of course it has been an accepted fact that timber rots followed fire, the spores of the wood destroying fungi gaining entrance to the heartwood through the fire scars, but there had been no definite figures to show to what an extent fire is responsible for such a condition. A recent study made on white fir in Oregon in which a number of trees infected with stringy brown rot (caused by Echinodontium tinctorum) were examined, showed that fire scars, frost cracks and lightning scars, in the order named, were mostly responsible for the introduction of the fungus. The trees in which the rot could be directly traced to fire scars numbered as many as those in which the rot could be traced tofrost cracks or lightning scars combined, while those in which the rot was traced to pin knots or unknown causes were so few as to be practically negligible. Every fire that is checked before it has time to do any damage means not only an actual saving in timber at the present, but a big reduction in the amount of "cull" when the timber is finally sold and a consequent economic saving both to the Government and the purchaser.

An opportunity afforded to every Ranger to practise forest sanitation is in the handling of free use permits. In marking trees for free use it is often possible to have trees badly infected with mistletoe, showing "conchs" on the trunk, or presenting general unhealthy appearances, taken out by the user and in this way to afford the remaining trees a better chance for healthy normal growth.

By adequate fire protection, by eradicating diseased trees and snags in our timber sales, by taking advantage of the free use privelege as a means of ridding the Forest of undesirable members, by destroying snags whenever possible and by unceasing watchfulness on the part of every one for all indications of abnormal conditions in the Forest, we will, in the future, bring our Forests into the proper sanitary condition essential for the maximum production of sound timber and we, as business men, must not be satisfied until this condition is reached.

S I L V I C U L T U R E

A revision of our timber estimate made in 1909 indicates that we have several billion feet more of timber. The estimate which was worked out carefully by the types by the District Rangers most of whom have been on their districts several years, is considered much more authentic than the previous figures.

Mr. Boyce recently found a rare and interesting specimen, a species of Phoradendron, mistletoe growing on manzanita, on the road between Kennebec House and Lake City, the second of its kind collected in California. Assistant Ranger Norwege also made his heart glad by presenting him with what he thought to be a petrified fungus.

Forest Assistant Gallaher has been requested through the Washington Office to work up his study of Comparative Returns for publication in the Review of Forest Service Investigations.

There will be considerable doing in the timber sale business this Summer. Besides the Davies Box & Lumber Company sale which was in operation last season, two other concerns, The California Lumber Company and the Verdi Lumber Company, will be cutting Government timber on the east side. The Mohawk proposition involving eighteen million feet has been worked up in anticipation of a prospective sale.

The Forest Supervisor recently gave a talk on the occasion of the planting of a Redwood on the High School grounds by the freshman class.

The reconnaissance estimates for last Summer have been completed by Forest Assistant Taylor. An area of 40,017 acres was covered, the estimated amount of timber being 955,179,000 bd.ft. or an average of 23,500 bd. ft. per acre.

H E A D Q U A R T E R S N E W S

Ranger Babbitt takes exception to an article appearing in the Sacramento Bee on March 14 which stated "No instance is on record of lightning ever starting a crown fire". He states the Long Valley Fire, Davies Hill Fire, Gold Lake Fire and English Reservoir Fire of 1910 were all crown fires, some of them bad ones, and all started by lightning. He further states that on the east slope of the Sierras most of the fires started that way, and barns and buildings are frequently struck by lightning, which is as common at 3000 as at 6000 feet elevation.

The Secretary of Commerce and Labor has approved an additional claim for compensation on account of the reappearance of the injury to Assistant Ranger Poore. Mr. Poore was injured last September by falling from a tree and returned to duty on October 29. He worked up until the end of November when he was furloughed. The wound had not thoroughly healed and Mr. Poore returned to work, so that it soon reappeared and he was unable to do any work all Winter. This additional compensation will entitle him to three months full pay at his regular salary.

The District Office has started the issuance of a monthly circular letter of Progressive Ideas. This letter will contain the Progressive Ideas or "Short-Cuts" evolved by individual Rangers or Forests, and is another step in the direction of standardization of Forest Work. Almost every one of you have worked out some "short-cut" which you have found of assistance in your work, and if you can learn your idea to the other fellow it may help to lighten his burden as well as advance the cause of efficiency. If you have any ideas to suggest they should be sent this office not later than the first of each month, so that they can be forwarded to the District Forester for issuance in the monthly letter, which is published on or about the 10th of each month.

Ranger Merrill will be on detail at the District Office for at least six weeks beginning April 15 for duty in the Office of Operation.

Forest Assistant Mills will return to Nevada City on April 1, after a three months detail to the Feather River Experiment Station at Quincy.

Now that Joaquin Miller is no longer alive, we hope that the general public will begin to sit up and take notice of our bard who is good for an effusion any old time and on any old occasion.

Rangers Wilson and Babbitt were on detail in the Supervisor's office a portion of the Winter months where, among other things, they made some practical contributions to the efficiency doctrine.

Assistant Rangers Helbig and Walton cleared out the dead timber along the telephone line to North Bloomfield this Winter. Walton had a narrow escape from a "widow-maker" which laid him up with a bruised arm for several days.

Forest Assistant Taylor and Gallaher are at present at Keddie on the Plumas National Forest where with several other Forest Assistants under the direction of Mr. Margolin of the District Office they are trying out a new system of reconnaissance.

Mr. J. S. Boyce, Assistant to Dr. Meinecke, the Consulting Pathologist of District 5, and Deputy Supervisor Pratt recently spent several days on the sale to the St. Gothard Mining Company near Bloomfield, obtaining data to assist in the determination of cull factors.

It is a matter of pride that the only telephone line to the upper country working out of Nevada City after one of the heavy storms this Winter was our tree line to Sierraville. This line constructed of #9 wire passes through 30

miles of a high snow country and has been in operation all Winter.

Assistant District Forester Headley and Inspector of Records Riley spent about a month on the Tahoe the first part of the year working up a Cost Keeping System. The District Forester and Mr. Thompson were in Nevada City a day or so in connection with the work. The Supervisor who served as a member of the Committee made a trip to San Francisco in early March to assist in the preparation of the final draft of the proposed scheme

Forest Assistant William H. Gallaher has returned from his trip around the world, and reported for duty on February 26. He made an extensive tour of England, France, Germany, Switzerland, and India, returning via China, Japan and the Hawaiian Islands, and devoted considerable time to the study and observation of Forestry while abroad. We are all glad to see "Bill" with us again. He will be engaged in making a Silvicultural working plan for the Sierraville District which has practically all been covered by reconnaissance.

The Rangers Meeting has come and gone and all the Rangers here on detail for the winter have returned to their headquarters -- so has our stock of supplies. Our supply room shows evidences of a hard Winter. About all that is left is a few pieces of broken boxes. Every one took advantage of his environment and took everything else that was loose. But of all these depredations and devastations, the brilliant stunt of one Ranger stands out alone. By some hook or crook he obtained the key to the stock room, and maintained his residence there "to the exclusion of a home elsewhere" for three days and nights. During this time he collected all the empty dry goods boxes in town, chartered a special car on the Narrow Gage to Colfax, and - - - - our stockroom now tells the rest of the tale.

Assistant Ranger Poore was recently called to Auburn as a witness at the hearing in the Sailor Mines Cons. case, and brings back unmistakable evidence of where this property went. He says up in one corner of the court room there was a large blackboard bearing the following legend:

WILSON HAS EVERYTHING !!!!

ASK HIM

A Committee on Forest Standards composed of Mr. Headley, Mr. Bigelow and Rangers Merrill, Babbitt and Wilson, has been appointed to make a study on the Tahoe during the coming field season. The field members of the Committee will record (1) the jobs performed in detail and the time consumed on each job; (2) miles ridden, time consumed, average rate of travel per hour and average number of miles ridden per job; (3) the monthly itinerary charted on a map for the purpose of determining whether the average miles ridden per job can be reduced by careful planning on the part of the Ranger. From this data it is hoped knowledge will be secured of the amount of work a man can in reason be expected to perform, in such shape that these standards will to some degree, at least, be applicable to other men and other conditions.

Detailed diaries will be kept on letter size forms and will be written up at the end of each day's work, and will be forwarded monthly to the Supervisor together with a map of the district on which has been charted routes traveled and jobs performed during the month. The diaries will show the time of starting and finishing each job or step in the day's work. In handling correspondence, for example, they will show the number of letters written and time consumed. The time of each distinct job will be recorded in hours and minutes, giving for short jobs the exact minute of starting and finishing, when possible.

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The Cost Keeping Committee which met on the Tahoe during January and February produced a very thorough and interesting treatise on Cost Accounting in the Forest Service, and evolved an excellent workable system which was recommended for adoption as standard throughout the Service. The treatise, after defining the purpose of Cost Accounting brings out the fact that the effect of Sheet "A" is conclusive evidence that even faulty determination of Unit Costs of work has a marked effect in stimulating economy and efficiency and that with greater accuracy such cost system will find increasing usefulness. It is thought that with reliable cost reports the Forester, District Forester, Supervisor and District Ranger will have a much better measure of efficiency than it is possible to have without such reports, and that inspection, supervision and help can be placed more intelligently if conditions are revealed by adequate cost records.

Mr. Du Bois' idea of a ranger's expression on receipt of the new Cost Keeping System. He has just received the new Service Report forms.

The treatise then proceeds to point out the short comings of the present system, some of which are as follows:

It does not show cost of fire protection and cost per M. of administering timber sales and no provision is made for charging supplies obtained from Supply Depot as part of the Cost. It was the opinion that the instructions covering distribution of time are so vague that uniformity is not secured where uniformity is essential and that the system is inconsistent in the accuracy sought. Time is charged by hours to different captions, but this comparative accuracy is ignored or abandoned when the figures are arbitrarily pressed into a 240-hour month.

These faults have all been taken care of in the proposed system. In working up the data for the treatise careful attention was given to every criticism that had been made of the present system, and the rangers on detail to the office were consulted fully in order to secure clearness in preparing the Manual on Cost and Financial Accounting.

The proposed scheme which is a long stride in the right direction, was constructed along the lines of systems advocated by specialists in scientific management, efficiency engineering and cost accounting. We earnestly hope for its adoption, effective July 1.

Here is a chance for any Wallingfords who may be in our midst. The following letter was recently received by Assistant Ranger King, but he does not feel equal to it:

"U. S. Forester,
Downieville, California.

Dear Sir:

Du you know of enny timber Holders wanting a lone for Sawmills and R.R. to get timber On the market. If so I can place a lone from $25,000 up to $1,000,000 & even more as long as the Securtys will Stand the lone, from 3. to 5. years. Ore more now my commissin is 21/2% fore getting the lone & I will alow you one 1/2 of one % for getting the timber & I will fernish all Blanks to be fill out. you can get a commissin contract In my name and have your Per cent assined to you and send contract to me as this may make you some nice side money. In case you may know of a large track for sale at a Bargan I may be able to sell It -- commissin is 10% & you are to share in it -- Keep this in mind & it may Lead to something If not at once, & Let me Here Soon as you have a line on a lone timber. Must have crusers report & a topograph. Map. Showing sise land and timber and Oblige,

etc. etc. "

The Rangers' Meeting

The Ranger Meeting's over, and we've all returned
to camp
And the wisdom we've imbibed seems to give our
brains a cramp
What we haven't learned of fires isn't worth a
single thought
And the fungi and such tree pests, we can pick
them up red hot
For we saw them on the blackboard, and we've learned
their every twist
So their days are surely numbered, for we'll slap
them on the wrist
And that able word "efficient" we can juggle out of
sight
For we saw it turned and twisted backwards, forwards,
left and right.

What we do not know of timber would be hard to show
us now
For we chewed upon this subject 'till there are
wrinkles on our brow.
We watched it from the seed, 'till it grew a mighty
tree
And we found out how to sell it, and how to give it
free.
We know just how to cut it, lop the limbs and pile
the brush
And when it comes to burning, just leave the job to
us
Estimating fascinates us so, we've nearly ceased to
rove
For we're busy mapping timber in our cabins by the
stove.

Now "Reports" has been a subject that has turned our
dark hair gray
But we put the kibosh on it in a single happy day.
We know that an affidavit must state a solemn fact,
And not that "Tom Jones thinks that Bill stole
Jack Smith's hat"

We know just what a trespass is, and what's a
squatter's right
And the value of water as a power to make electric
light
We can classify even sections till we can say them
off by roto
But there's a few odd numbered sections that seem to
get our goat.

We thought all there was to grazing was to keep the
stock in feed
And get them plenty water, and all the salt they need.
To see they do not tramp the range, nor stray on
others' land,
And count the stock, and run out the range, for each
and every band.
But we all know now that grazing means far more to us
than that.
We must grow more grass and browse feed too, and get
it on a map,
Then show the stockmen how to grow two head instead of
one
And thus cut down the price of meat, instead of with
a gun

A. R. Ivey

For Mafford

THE TRINITY FORESTER

Vol. 1 - Weaverville, California, October 1, 1911 - No. 5

With the exception of the following changes the personnel remains the same as that given in the September number of the Trinity Forester:

Laura E. Williamson, Forest Clerk, Leave of absence Sept. 25
Ruth G. Trimble, Temporary Clerk, Appointed Sept. 25

District 1

R. H. Solomon, Forest Guard, Appointment terminated Sept. 30

District 2

Royal G. Trimble, Forest Guard, " " " 16

District 4

Fred Foss, Forest Guard, " " " 30
W. R. McArthur, Forest Guard, " " " 30

District 5

H. J. Kohnenberger, Forest Guard, " " " 30

District 6

John C. Graham, Forest Guard, " " " 30
W. I. McNeil, Forest Guard, " " " 30
Jarrett W. Irving, Forest Guard, " " " 30
Joseph H. Martin, Forest Guard, " " " 30

District 7

Wm. A. Thomsen, Forest Guard, " " " 30
A. Pickens, Weaver Bally Lookout, " " " 23

Reconnaissance Party

J. R. Bruff, Field Assistant, " " " 30
D. E. Harrower, Field Assistant, " " " 23

EDITORIALS AND COMMENTS

The Prize Although it is now stale news that the first prize in fire protection was won by the Trinity in August, yet we want to again congratulate each member of our force for having made this record possible.

The prize is a shovel decorated in green, with the letters "Fire Protection Prize, 1st Class" on the shovel blade. The records of the month were as follows:

1st class - TRINITY - 12 fires; total area burned over 96 acres.
2nd class - MONTEREY - 1 fire ; total area burned over ½ acre.
3rd class - MONO - No fires.

Our record for September, as far as known, is as follows: Class A, 2; Class B, 2; Class C, 3; area burned over 37 7/8 acres.

No doubt it was a source of keen satisfaction to all Forest officers of this Forest to learn of our winning first protection prize for the best fire record for August. A record of thirteen fires with 96 acres burned is certainly a contract to last year's strenuous times during a similar period. We are now beginning to feel that perhaps we have laid the corner stone of genuine fire protection. To perfect and carry out a sound fire plan on a Forest of this size and danger means that we must direct thought and energy to its conceivement and fulfillment. Our ground plan of protection must be built onto from time to time. Improvement of system and detail must ever continue.

Don't forget that the element of personnel also will figure largely in this as in other matters. The combined efforts of a dozen earnest men in their relations with the public will accomplish much in creating a favorable public sentiment. Let no opportunity pass to win a convert and make a friend for the Service.

To have the confidence and good will of the people in our Forest means that the fight is more than half won. Fire protection we must have, otherwise forestry is useless. The price of safety means organization, system, vigilance, and continued effort on our part. The people's property in our charge is worth millions of dollars today. The interest on this capital as well as the capital itself depends largely on our efforts. Let us do our level best.

Herbarium Although the herbarium collection suffered a serious loss last summer in the fire which destroyed Ranger Garrett's house, much has been done toward increasing the collection this year. Over one hundred specimens, including fifty grasses and other ground cover, and fifty of shrubs and trees, have been prepared for shipment to the District Office. With the addition of other specimens not yet sorted over, there should be atleast one hundred fifty specimens sent away.

Rangers Gray, Garrett and Chamberlain sent in a few specimens and it is hoped not only these rangers but others will assist the office force in adding to the collection next year.

Local Contributions We are glad to state that this month it was necessary to omit some articles because of the number of contributions received. Now that the fire season is over there is time for good thoughtful articles on the various phases of our work. Many of these discussions would be concerned with improvement work or fire fighting, or timber sales. The ranger, however, because of his close association with the forest, has especially good opportunities to observe the relations of plants to each other and to their environment.

Scientific forestry may sould like the class room, but it is only the application of knowledge based upon observation of things as they actually are. We hope, therefore, that each ranger will present the conclusions which he has reached as a result of certain observations. In this manner tere will be gradually accumulated a great mass of data concerning our own Forest.

Another Invention! The efficient Forest officer not only does his work well but he realizes the value of using his head. Assistant Ranger Box and Guard Thorne made a most ingenious reel and box for rolling up the emergency telephone line to Weaver Bally Mountain. Not only was the work done expeditiously but the coils are regular and compact.

Reading Course Assistant Ranger Everest has received a nice letter of commendation from the District Forester on the work done in last year's reading course. Besides Mr. Everest's papers, answers on the reading were received from Rangers Gray, Chamberlain and Garrett, which were almost equally praiseworthy. The supervisor, in his various letters, has already presented the necessity for and value of

this reading course, so that nothing can be added here.

Reconnaissance — During the summer days we are apt to lose sight of real forestry work while being so busied with the improvement and protection work. One of the essentials of any business is the knowledge of its assets, and without a knowledge of the Forest resources no plan of management can be made. In a general way the quantity and location of the timber is known, but there is required the more exact knowledge obtained through reconnaissance.

After the quantity and condition of the timber and a map have been obtained, there are still necessary figures and data concerning the growth of timber in order to prepare a working plan. The first one of these steps - the reconnaissance work - has been carried on by party during the past two years, and it is with a great deal of pleasure that this number is devoted to this phase of our work. The personnel of the parties has been good, and we feel that the work has been done in an honest and able manner.

Our Exchanges — Since our last issue there have been received in this office the following news letters: The Stanislaus Review, The Mono Ranger, The Apache News, and the Modoc Review. Each of these has excellent articles, some of which we would have included in this issue had there been space.

RECONNAISSANCE ON THE TRINITY

The first work done on any part of the Trinity was that by Forest Assistant I. F. Eldredge on the Hoopa Valley Indian Reservation in 1908. The following is taken from his report:

"In all, a territory of approximately 230 square miles in extent was covered at a cost of about $21 per square mile, including all salaries, traveling expenses and the office work in the preparation of the report. The extreme roughness of the country, distance from supplies, and severe climatic conditions during the winter months, together with the fraudulent character of the Land Office surveys throughout the country traversed, are accountable for the comparatively high cost of the examination.

The field party, in addition to myself, consisted of Forest Assistant G. Barneau, Lumberman W. T. Andrews, Forest

Agent N. B. Fokko, two temporary assistants employed as topographers, and Hoopa Indian packers, rodmen, canoe men, cooks, etc., as were needed from time to time.

The estimate of the stand of timber on the Reservation proper is based on an actual count on about three per cent of the timbered area and the estimate is necessarily approximate. The valuation survey strips were located through typical country and no effort was made to run parallel lines.

The estimate of the Extension and the Lower Allotments is based on the actual count on five per cent of the timbered area. In making the valuation survey, the strips were run in quarter-mile parallels with the river as a base line, so that each row of allotments was bisected by the line. The estimate is nothing more than approximate and no important financial transaction should be based upon it.

The maps are the first topographical maps and the only accurate maps of the country covered. The original Land Office survey through the entire tract was an absolute farce. With the exception of writing up elaborate field notes, by far the larger part of the work was never done at all. Occasional corners were found but they seem to have been put in at random and often have no connection with any other corner. Largely for this reason but few of the allotments were actually surveyed out, when the allotting was done, nearly all of them being merely located on papor. It is impossible to locate, on the ground, from the Land Office description, fully seventy-five per cent of the allotments, since the corners and the sections in which they purport to be were never put in. However, the allotments can be located very well by using the river as a base from which to start, as was done in this work."

During August 1909 Forest Examiner Louis Margolin spent about three weeks in obtaining an estimate and taking the data for a topographic map of a prospective sale area of twelve sections on Grizzly Mountain. Mr. Margolin worked alone and obtained his topographical data by pacing and using an aneroid, the estimate being based on sample plots.

July 1, 1910, Forest Assistant Jotter and a party consisting of Guard O. M. Evans, and Field Assistants H. W. Curry and F. M. Nottage, together with Assistant Ranger Wm. X. Garrett, began the first reconnaissance work by party on the main Trinity.

There were covered during the three and one half months of work 80,000 acres of government land, largely with a five per cent strip survey estimate, though for a part of the area a traverse survey with sample plots was used. There were also mapped and roughly estimated 25,000 acres of patented land. Since the area estimated is but sparsely

sprinkled with section corners, the usual method of survey was by carefully running into each unit a base line on which there were established in the center of each row of forties a monument from which the strip survey was later started. Since the topography was very irregular and the existing government maps practically worthless, a chain was used in measuring distances. The following table is used in making the proper allowance for advances due to changes in elevation:

Ch.*	25	50	75	100	125	150	200	250	300	400	500	600
2	3	10	23	46								
4	2	5	11	20	32							
5		3	8	15	20	30						
8		2	6	10	15	22	40					
10		2	4	6	12	18	31	49	72	135	229	
12					10	14	26	40	59	108	178	
15						11	20	32	47	85	126	
20							15	24	35	63	98	144
30							10	16	23	43	64	93
40							8	12	17	31	31	48

* This column gives chains actually measured
First row of figures (25, 50, etc.) gives difference in elevation.
Body of table shows the necessary advance.

Two men, and a large part of the time three, made up the party, one man acting as topographer, the other as silviculturist. The third man, in a three man crew, watched the chain and assisted both silviculturist and topographer.

A careful system of keeping notes in silvics and topography was used, valuation survey book No. 333 being used for the former and Form 874-15 in a loose binder for the latter. A section per day was averaged for the working time of three men, and little office work was done during the year. It seems a loss of good time to devote the days of field work to office work, yet it was found all but impossible later in the winter to get through with the office work before the next season began.

The total cost of the work was $1500, resulting in a cost per acre of one cent by traverse and of three cents by regular strip survey 5% estimate.

Cost per acre	.031
Cost per forty	1.24
Cost per section	19.84
Cost per township	725.24

The days spent in reconnaissance field work may

be classified in this manner:

Compass survey	64
Moving camp	16
Traverse survey	18
Office work	7
Sundays	18
Securing data for tables, etc.	5

The area estimated was extremely rough and inaccessible, with many brush covered slopes all combining to bring up the cost per acre, as well as to reduce the average per day.

May 15, 1911, reconnaissance was begun on the area to the north of Hayfork Creek and has up to the present been carried to the source of this creek.

One of the very pleasant features of reconnaissance work is the opportunity to associate with bright young men from the various forest schools. This was particularly the case this year, when six colleges were represented by the following men in the party:

Forest Assistant Jotter, Ohio State University and University of Michigan; Guard O. M. Evans, University of Michigan; Forest Assistant Howard de Forest, Princeton and Yale; Field Assistants Harry Yates, Roy Holeman and Rufus Holland, University of California, J. Russell Bruff, University of Nebraska, David E. Harrower, State College, Pennsylvania, Otto W. Pflueger, Ohio State University.

The territory covered was similar to that of last year and the methods differed little, except where the nature of the country and the experience of the past year suggested changes for the better. The topography of part of the area and the experience gained in mapping, showed that chaining need not be done entirely, so that pacing is usually done in coming back to the base line. Instead of a regular chain, a steel tape 66 feet long is taken, the fears that this tape would break having proved groundless.

Two man parties, sometimes three or one, as the occasion demanded, do the work. The topographer carries a form 323 township plat and on this shows streams and ridges, the contour lines being put on a four-inch map at camp. Elevations are taken by the aneroid and courses of streams and ridges carefully noted. The map is considered a most important part of the reconnaissance work, for while types and stands may change, only an upheaval will require a new map. A four-inch to the mile scale map is made since a map of this scale can be used for any purpose. The idea is constantly kept in mind that this map is not alone for the reconnaissance work, but is to be used for any of the various purposes that require a map.

The silviculturist carries a form 323 township plat on which he keeps record of his forties, a form 322 on which he puts the cover, and a form 321a for the diameters

and height classes, as well as brief notes, from which the section is later written up.

Volume tables are arranged in site classes, based upon measurements of height and diameter taken in the locality. By comparison with heights and diameters given in the "Handbook" a volume table is made for the various species of the different regions.

The four-inch maps, together with the cover, the estimates per section, and the section write-up, are all prepared in the field. This winter the final maps will be prepared, the estimates figured, and a description written of each large logging unit.

There have been covered approximately 200,000 acres of government land. The full report at the end of the season will give exact figures and costs. Work will be carried on by three or four men in camp until about December 1 or 15, when the storms will no longer permit of work being done to the best advantage. Rangers will be used whenever possible in the reconnaissance party work, but the work of protection and improvement seems to require constant supervision, so that it may be possible for a short time only this fall to detail men to the party.

During good weather, while final maps and reports are being prepared, one or more of the permanent men will work the area near the supervisor's office. One or more men will also visit the district rangers and attempt to work out the area near each ranger headquarters during the winter, with the assistance of one or more rangers. This will permit the ranger to become familiar with reconnaissance methods as well as make possible a modified form of winter work.

E.V.Jotter.

Logging in Michigan and Kentucky

Logging operations fit the topography. In Michigan the country, a glaciated one, varies only from large stretches of level land to gentle or moderate slopes. In Kentucky the surface is broken by mountains and deply cut rivers, making numerous "coves" and escarpments.

All but one trail of the great white pine forest of Michigan has been cut, and now the hardwoods, mainly maple, oak, bass, elm, birch and hemlock, once thought of little value, are being logged. All the larger mills are located on the Great Lakes, narrow gage railroads running back to these tracts in the interior of the State. The camps are usually light board affairs made portable. Crews, largely foreign, average fifty men, who will get out and load 25 M per day at $3.00 per M. Wages average $28 per month and board.

The foreman gives to each cutting crew a "strip" on which to cut. This crew is usually made up of three men - a chopper who notches the tree and, after it is felled, chips into the bark the length of the logs, usually 12, 14 or 16 feet; the sawyers who fell the tree and cut it into the proper length, and the swampers who then come in, cut away the brush to each log, trim off any limbs and make the log accessible for the skidding team. This team drags the logs with tongs to the wheel road, making bunches of three to four logs. The "big wheels", ten to twelve feet in diameter, are then run straddling the bunch of logs. After letting the tongue of the wheels point skyward, thus chaining the logs to the large 12 x 12 axle, the tongue is drawn down and the logs are lifted from the ground, swinging freely. They are then taken to the bank, piled on inclined skidways and loaded on the logging cars. The loading is done either by the cross-haul or loader. With the cross-haul a chain is wrapped around the log and one end fastened to the car. To the other end a team is hitched and the log is rolled onto the car. The loader is a sheer leg arrangement for picking the log up, with hooks in each end, lifting it onto the car, a man at each end guiding the log with ropes. About 2 M is loaded on each car. The logs are then hauled and immediately milled.

When the first light snows fall, "drays" are used to get the logs to the banking ground. These are similar to single bobsleighs, with a spiked cross piece. The logs are rolled with cant hooks on the drays, chained, and half drawn, half dragged to the bank. In winter the sleighs are used and loads of many thousands of feet are easily hauled in this way.

In Kentucky a large part of the work is done by contract as labor is less reliable. Felling crews of two men get from $ 0.75 to $1.00 per M. On the more moderate slopes oxen are used to skid the logs to the banking ground at the bottom of the coves, but on the steeper slopes horses are used for they must often move rapidly to get away from the danger of rolling or sliding logs. The logs are then cross-hauled onto the small cars which run on a pole road. Poles five to six feet are cut and joined at the ends and a road similar to a railroad is made. The wheels of the car have a very large concave flange to fit the poles. The cars are then hauled by mules down the coves to the railroad on the main stream where they are loaded on the cars by a steam-loader and taken to the mill.

O. M. Evans.

Reconnaissance on the Gila Forest

On the Gila National Forest of southwestern New Mexico, reconnaissance in the usually park-like woods of the Mogollon Mountains is interestingly different from such work in the denser forests of the Trinity. The Mogollons present two main sorts of woods, the mesa forest of western yellow pine on comparatively level land, and the forest of Douglas fir, Engelmann spruce and white fir of the high Mogollons, where there are steep slopes, cliffs and canyons.

As the region is practically unsurveyed, a base line was run from an established section corner with compass and chain, by a crew of four. This advanced through the territory to be estimated by whatever route the topography and location of the timber made desirable and was roughly plotted as it progressed, by figuring latitudes and departures in the field, with a traverse table. The entire course was blazed on both sides of the line, and at twenty chains of actual advance, north or south, or east or west, as the case might be, stations were established on the middle lines east and west or north and south, of the various tiers of forties. These stations were marked by stakes inscribed with the number of chains of distance to the nearest boundary of the forty, the designation of the forty, and often the elevation as read by the aneroid of the base line crew. The stakes were made moreconspicuous with pieces of red cloth, and were also numbered consecutively in each separate township.

The estimating, mapping, and silvical work, was done by one man crews. An estimator would be assigned two stakes and a run in a given direction from them. With a Forest Service compass, Jacob staff, aneroid and special note book, he would start from one stake, run out through the center of a line of forties, say to some divide, offset twenty chains to the center of the adjoining tier of forties, and run back to check in on his second stake. By means of his compass and aneroid, he sketched in on the plat representing the forties of a section on one page of his note book, the streams, ridges, and other topographic details, along with fifty foot contour lines. On the opposite page he filled in corresponding spaces with his estimates, and, at the end of his work on any one section, wrote a brief silvical description of what he had seen of the section as a whole.

The estimate of the timber was obtained by taking from one to three sample acres in a forty. These might be strip acres, one chain wide by ten long, or two chains wide by five long, or a circular acre. In any case the number

of trees on the sample acre was counted and the average tree guessed at by diameter and height. With a volume table the contents of the sample acre were computed. The stand for an entire forty was obtained when the end of the forty was reached, by considering the number of acres on the forty that were stocked, and according to the showing made by each sample acre taken. The totals in thousands of board feet were recorded by species.

Probably the most important factor in securing a fair degree of accuracy in this work was the sample forties. A few times during the summer, at the beginning of the work, and later when a distinct change in the general type of forest encountered gave a new set of conditions, representative sample acres were laid out with compass and chain. The boundaries were blazed and then the contents per acre and per forty guessed at by all and recorded. Next strips one or two chains wide were run through the middle, north and south and east and west, with all trees on the strip calipered. After the running of each, new guesses were made by all, both of the stand per acre and per forty, and recorded, then the calipered strip was figured in the field with the volume table.

While calipering the individual trees, guesses would be made of most of the diameters before reading the calipers, these guesses being made at varying distances. Then, perhaps, further strips would be run through the forty, five chains in from the corners, two strips running through east and west, and even a further two, north and south, as the irregularity of the stand and the results of the work demanded. With this went the revising, as the individual deemed necessary, of each former estimate before the figuring of the succeeding strip. All this of course being tempered by the judgment of the head of the party, who conducted such work, as to the degree of exactness to which it was desirable to carry the operation.

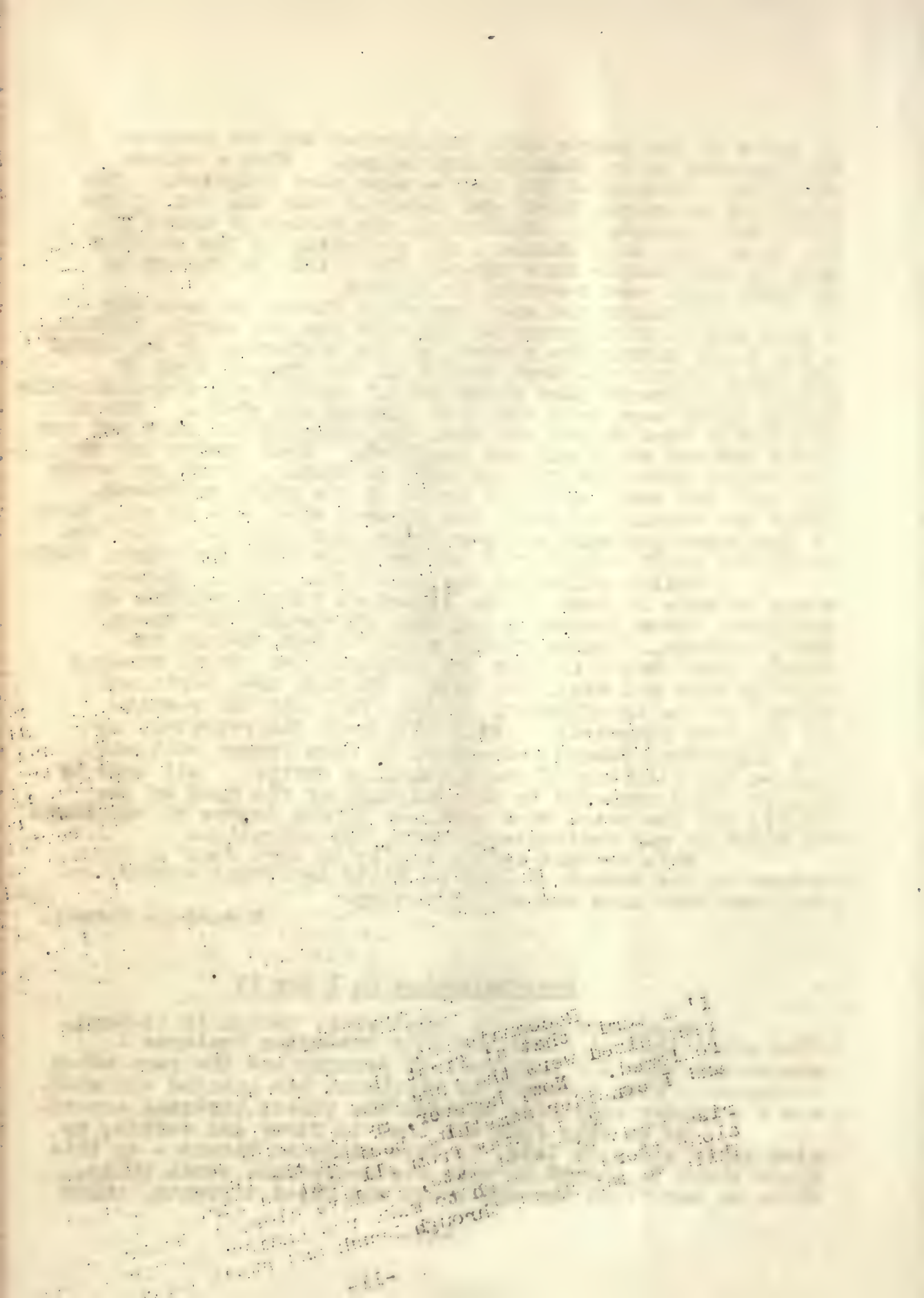
This account refers wholly to work done by the writer in the summer of 1910 as Field Assistant working in the base line crew and at estimating.

Howard de Forest.

Reconnaissance as I see it

Reconnaissance is great work, though it is hard. I'll admit that at first the only redeeming features I recognized were the huge meal at evening and the rest which followed. Now, however, my viewpoint has changed somewhat, and I consider something besides the purely physical aspect.

To be away from all that is dirty and sordid, to rise early and work late, to live close to Nature - in this alone there is enough to make reconnaissance worth while. While we may fight through brush and sweat torrents, there



always comes that moment when we reach a rushing, icy, mountain stream, and then all our woes are drowned in that one sublime draught. We may toil up the steep side of a big mountain, with the slide rock playing havoc with our legs, yet when we reach the summit there is always a rest and a view off over the endless mountain ranges; perhaps far to the east we see the towering, snow-capped Sierras. And the day may be long and we may return to camp completely tired out, yet we find rest, then - yes, rest and a grand old "feed".

Of course there are certain trivial occurrences which detract from the enjoyment of the work, but these are far out-balanced by the many interesting and attractive features. In short, this summer in the reconnaissance camp has been one of real benefit to me - benefit both physical and mental. I have certainly enjoyed the work.

D. E. Harrower.

Comforts and Necessities for the Reconnaissance Man

One of the first essentials for comfort in the woods is a good bed. A man must sleep well to be able to walk over hills all day. A good comfortable bed may be made with fir boughs. There are a number of ways of building a bough bed. The essential thing is to get the most spring possible from the boughs. One way is to take two small logs three to four inches in diameter and a little over six feet long, and lay them on the ground about four feet apart. Then place two short logs at the head and foot, thus forming a rectangle. Then lay rather large fir boughs cross ways, with the under side of the needles upward. Beginning at the head thatch with smaller boughs, putting the butt ends underneath, thus bringing the finer needles at the top of the bed.

The main fault of a bough bed is that it takes considerable time to build and then in a couple of days all the spring is gone and it must be made over. With such a bed a canvas cover may be used to hold the blankets in place. A piece of ten-ounce duck about 6 x 7 feet will be needed. Fold over, bringing the two edges together and fold up about six inches at the foot. Then fasten snaps and rings along the sides and at the foot. When the blankets are inside such a bag and the edges are snapped together, a good sleeping bag is formed. The canvas also comes in handy to wrap around one's duffle when moving camp.

While the first cost is rather large, air beds are very convenient and for those who spend most of the time in the woods they are probably the most economical in the long run. They are always ready and don't have to be remade

every few days as do bough beds. They are also water-proof and so protect one from the damp ground. Air beds may be purchased at a cost of about twenty-five or thirty dollars.

Another form of bed which is very comfortable and more permanent than a bough bed can be made by building a frame work of poles up from the ground. Then weave rope back and forth to form a net on top of which boughs may be laid and then the blankets.

In the evening one wishes to do a little reading or writing and it is then that one appreciates a good light, for a camp fire is certainly a failure ac a light. The simplest form of light is a candle stuck to a board, but if unprotected the slightest breath of wind will blow it out. A good device for a camp light is to take a gallon fruit can, cut a round hole in one side about three inches in diameter, then make a hole in the bottom through which the candle may be pushed, but fitting too tightly for the candle to slip through. The walls of the can will protect the light from the wind and also serve to reflect the light through the hole. Nail a stick to the side of the can and the light can bemoved as needed, then held by the stick pushed into the ground. For one who desires a more elaborate affair, a folding lantern can be purchased at a cost of about two dollars and a half.

In the matter of personal equipment every one has his own ideas. Since one is walking all the time the feet deserve the first attention. A person should have two good pair of high boots well hob-nailed, about four pair of light woolen socks, and about four pair of the heaviest woolen socks obtainable. A pair of light moccasins about the height of an ordinary shoe will be found very convenient to wear about camp evenings and on Sundays. Khaki isprobably the most serviceable and lightest thing to wear in the field. For a summer's wear one would need about two shirts and two pair of trousers. A light narrow brim felt or linen hat is the best for field wear. An extra flannel shirt and sweater is handy for cold weather. Toilet articles can be carried best in a cloth roll with pockets made for the purpose. A small pillow is mighty handy at night.

The working outfit is an important part of camp life but it is too broad a subject to take up here.

H. S. Yates.

Winter Reconnaissance on the Shasta Forest

When the subject of winter reconnaissance was discussed at the supervisors' meeting last December, considerable doubt was expressed by most of those present as to its feasibility. During the previous winter, however, a con-

siderable amount of surveying had been done on the snow on the Shasta Forest and Supervisor Hammatt felt quite confident that reconnaissance work could be successfully carried on during the winter.

During the summer it had been impossible to detail any of the rangers to reconnaissance work as they were all extremely busy with their protection work and other field work. It is quite important that the rangers be familiar with reconnaissance methods and work, and this winter work furnished an excellent opportunity for them to gain this experience at a time when there was but little work needing their attention in their districts. A large part of the winter work was carried on in a reguin where the underbrush is so dense that reconnaissance work is practically impossible during the summer. The winter work will also aid materially in completing the reconnaissance work of the Forest.

This winter reconnaissance was carried on by two crews of six men each - five rangers and a forest assistant. The crew of which I was in charge worked in the northeast portion of the Forest, working from the Forest boundary south to a divide up to which the other crew was working from the south.

We raised our tents at our first camp on January 8, "and the next day it snowed". We had three camps altogether during the winter; at the first two we were in a country of lava rock without fresh water and our water for drinking and cooking had to be hauled from a well five miles distant. For this purpose, and for convenience in bringing in supplies, we kept with us at our first two camps two horses and a wagon (and later a sled). The trips after water and supplies were confined as far as possible to days when it was impossible to do field work on account of soft snow or storms. The team was also used in going to and from work when the work lay at a considerable distance from camp, as there was a large amount of level country at our first two camps. When the snow became deep it was found quicker to walk to work rathern than to ride where there were no roads broken. Snow was melted for water for the horses, and to considerable extent for our own use as well. We had three tents: one 16 x 16', was provided with a board floor, and used for our bunk house, and was kept very comfortable by a heating stove; another tent 12 x 14' was our mess tent and kitchen; the third tent, 16 x 16' was the stable. The rangers took turns at cooking, acting as cook for a week at a time, and doing no field work during that week.

During the first week the snow was very shallow and we worked without snowshoes. After the second snow storm we started to use snowshoes and continued their use during the remainder of the work. We had five pair of web shoes

and two pair of skis. The web shoes were best suited to our purpose as most of our work was done by pacing. After the men had all become familiar with the methods of work and with pacing on snowshoes, we worked in crews of two men each, consisting of a compassman and tallyman. The compassman was equipped with a standard compass and jacob staff, an aneroid barometer, a tally register, a map book form 321, and he ran the lines, did the pacing, made the topographic and type maps and took the silvical notes. The tallyman used calipers to take diameters until he became expert, and then carried a diameter tape to make frequent checks; he was also equipped with a standard Forest Service hypsometer, and a tally book form 333, and tallied the trees on a strip two chains wide by species, diameter breast high and number of logs, and also assisted in the preparation of the silvical notes.

After a man had spent two weeks as compassman, he changed and acted as tallyman for an equal period, and vice versa, in order that each man might be familiar with all the details of the work. On days when it was impossible to do field work the compassmen transferred the topographic and type maps and the silvical and field notes to forms 322, and the tallymen entered their estimates on these forms. In this way the rangers all became familiar with the office work as well as with the field work, and at the end of the season the only work left to be done in the supervisor's office was the combined map on township plats 323 and the general report.

Four strips, running through the center of each tier of forties, were run across each section: the strips were two chains wide, so that 10% of the area was covered. The tracks of the compassmen in the snow made it very easy for the tallyman to follow the line without keeping watch on the compassman. When the men had become familiar with the work, each crew was expected to cover a section a day. The country in which we were working was well surveyed so that we could check on the large majority of section and quarter corners. A supply of fire warnings was carried along and at every corner found a fire warning was posted, usually on a bearing tree facing the corner. Even when the snow was very deep, the wind would scoop out the snow around the base of the trees so that the marks on line and bearing trees could usually be seen even though the corners were deeply buried. When we worked along the boundary, a supply of boundary notices was also carried for posting where we checked on section lines or corners along the boundary.

Working on the snow necessarily made it impossible to obtain silvical notes on the seedling reproduction, the soil, humus, litter, ground cover and underbrush and grazing

conditions. That part of the area which is fairly open can be gone over in the summer by one or two men rapidly and this data supplied. On the area covered by dense brush this will be more difficult.

From our first camp our work lay in a region which formed the wintering grounds of a band of antelope and of the mule tail deer, and it was not uncommon to see as many as twenty deer during the course of a day's work. At this camp too we were near a settlement, and a couple sleigh rides to dances at the school house several miles distant, a party at our nearest neighbor's, and a chicken dinner given one Sunday in camp to our friends were among the social events of that period.

The snowfall in that region was unusually heavy last winter. Our first two camps had been selected with the expectation of working there with little snow, waiting until the snow had settled in the mountains, but we had lasting snow on the plains as well.

Our third camp was up in the hills and was more difficult. We took our equipment by team as far as snow would allow the horses to go, then the horses were sent home for the balance of the season and two sleds were constructed with the skis for runners, and we pulled our equipment five miles, up to our camping site. Here we had a good spring of water but had to dig down over five feet to reach it. To pitch our tents on the ground we had to clear off from three to five feet of snow in a sheltered spot. While we were at this camp we had a blizzard, during which it snowed five days almost constantly and added several feet more to the depth of the snow. Our work lasted until we were called to Sisson for the ranger meeting the latter part of March. From our last camp we hauled our equipment ten miles to the nearest railroad point, but this being down hill and then across a wide stretch of level land was not very difficult.

The other reconnaissance party lived in cabins, as they had much deeper snow than we did at our first two camps. They hauled in their provisions on sleds made for that purpose along the lines of the sleds used in Alaska. Their methods of field work were similar to those described for our camp.

We found our quarters in the tents could be kept very comfortable throughout the winter, and the work was healthy and enjoyable. The reconnaissance experience will be of great benefit to the rangers in their work, and the amount of work accomplished during an exceptionally stormy winter proved not only the feasibility but also the success of winter reconnaissance on the Shasta Forest.

The following table is one taken from a report on the Shasta winter reconnaissance, which I have received since my transfer to the Trinity.

Area estimated	20,480 acres	
Area mapped only	7,500 "	
Number sections worked on	52	
Cost of field work	$1,744.60	
Cost of office work at Sisson	35.40	
Total cost	1,780.00	
Cost per acre field work (based on cruised areas only)		.0852
Cost per acre, office		.0016
Total		.0868

Division of time in field.

	Days	%	Cost
Field	112	24.4	$425.75
Cooking	66	14.5	253.00
Travel, moving camp and getting supplies	124	27.0	471.00
Holidays	41	9.0	157.15
Storms	97	21.0	366.30
Office	6		
Sales and telephone use	9		
Annual leave	2	4.1	71.50
Sick leave	2		
	459	100.	$1744.60

J. D. Coffman.

VIEWS ON RECONNAISSANCE

I think reconnaissance gives a beginner in forestry a better idea of the great forestry world and the big work to be done than any other work or study could give. There is a difficult side to the work, but also a very pleasant and interesting side; the interest varying from a combat between insects, one for life, the other for a good meal, to a view from a high peak of a multitude of forested hills with here and there a snow carved cone or range.

One may carry compass and drag chain or estimate timber until his limbs are stiff and feet blistered, but he can appreciate at night his bed of green fir boughs, whose crushed needles send up sweet incense, and the low murmuring of the pines as only those who have had such an experience can. One may find cliffs and chasms in his run which detain him till a dark hour, but the good meal from Uncle Sam's well supplied larder is a joy which only hungry men know. One may force his way through a mile of scrub oak and manzanita brush, at times going on all fours in order to move at all, but when he reaches the high divide with its wood of tall pines and firs, passes into the dense shade and refreshes himself at a cold spring, the contrast adds to the pleasure of walking the pine needle carpet, listening to the whir of a grouse's wings, the alarm note of a mountain quail or the crash of a buck as he plunges down the steep slope. There may be a half day of drought as one climbs a steep, dry, south slope, or a peak of five or six thousand feet elevation, but comes the finding of a cold mountain brook gurgling over the smooth rocks and drifting the white sand downward, and the reaching of the highest point where the cool upper air currents blow and the multitude of peaks, ridges and spurs, which from below seem to be all jumbled in confusion, can be seen to unite in pouring their springs and brooks toward a common stream.

In a few months of cruising in the forest one sees the application and great need of the sciences. To get acquainted with the trees and shrubs botany is essential; the rock formations and soils require geology; the diseased and dying trees call for entomology; there must be a physical reason for a distinct line between two species of trees or for the sudden change from woodland to brush; an absent cook and roadless journey demand a knowledge of domestic science and the art of packing; the science of understanding and directing men is an important asset of a forester.

With all these interests and problems before him, the new man is often tempted to take time and inquire into them while in the field.

R. H. Holland.

Note - This was received and inserted into this issue too late to number with the other pages.

(Editor)

Reconnaissance in District 4

The following interesting notes are by one of the men in charge of reconnaissance in District 4:

"On this job we have been estimating by forties and mapping on a four-inch to the mile scale, contour interval 100'. On this map we locate not only main forest types, but also characteristic stands, distinguish commercial and non-commercial stands, take notes on logging, accessibility, lumbering costs, soil, surface, and silvicultural notes.

We have been working between 8000 and 9000 feet elevation but the next move will take up away above 10,000. Some peaks run over 4000 and are so steep and rugged that I think triangulation for mapping and irregular strips for the estimate will be most practicable. We use the Forest Service standard hypsometer for obtaining elevations of points triangulated on. By careful compass and hypsometer work we can easily keep the per cent of error under two, which is good for rough country.

As a detailed system of records is being kept, we can tell on short notice how much time is given by each man to moving, mapping, estimating, camp office (map and estimate) and miscellaneous, also how much of each type and how many M feet are done per month. A separate sheet showing salary and expenses is kept and by a little clever manipulation we know how much per acre or per M the work is costing."

Topographic Surveys
Their Relation to and Value in Logging Operations
The Use of Maps

The following taken from the July 1 number of the American Lumberman is a summary of the paper given by W. W. Peed, Superintendent of the Oregon and Eureka Railroad Company, Samoa, California, at the Pacific Logging Conference, Vancouver, B. C.:

Mr. Peed did not advocate topographic surveys as a panacea for all business ills. While sanctioning them in practical form, he declared that some of the new "efficiency" articles were old principles in a new garb. He could not define a money value for topographic surveys in connection with logging work. He found three main divisions governing the success of logging operations, classifying them in the amount of timber per acre, the physical character of the territory to be logged, and the transportation facilities-all interdependent.

The speaker went into details of determining the amount of standing timber and much of the character of the

country, and its means of transportation, and declared that "with the topographical map you undoubtedly secure a better idea of the relation existing between two different points than can be done by personal investigation without spending a decidedly unwarranted amount of time". He deprecated going into the logging business before a cruise is made of lands under consideration before buying them. He illustrated the value of topographic maps by comparing them with architects' plans for a house or building, and was emphatic in commending common sense in the planning of logging operations and an intelligent understanding of such maps and their practical use. He recommended a thorough study of costs in comparative form and dwelt upon the value of "reliable, immediate, adequate and permanent records", and warned against dependence upon maps or plans not absolutely correct.

Mr. Reed went into details of output of machines, of estimates and of unity of methods, and declared that he knew of no method "that would better fulfill the conditions than a good map properly handled". While he acknowledged that the preparation of a good map involves some expense it would not be so great "as would appear on first thought and will undoubtedly under almost any condition be warranted."

Trails and Brush Disposal

I am not accustomed to writing articles for publication, but will make a trial.

The Ruth and Zonia telephone is complete and is in fine working order, the line being thirteen miles in length and well constructed. I congratulate Ranger Gray in his good judgment in his choice as foreman, as Mr. Wm. Vann accomplished lots of good work each day.

From my experience in building trails through short, dense brush, the best implement is a good mattock. First, have it sharpened by a blacksmith and not tempered too hard so it will break by striking rocks, and soft enough so you can easily sharpen with file. Any one can easily carry a file with him. By keeping your mattock sharp you can brush out a trail in good shape, and it will be free from sharp snags that would be liable to cripple your saddle or pack horse for all summer. However, a trail brushed in that way and six or eight feet wide will offer great advantages in checking forest fires should a fire come in that section of the country, and besides you have done something to be proud of. I have built considerable trail of this kind while on patrol and lookout duty, and I believe it to be the most practical way.

Assistant Ranger Box has my idea of piling brush except in regard to windrows. I believe the windrows should be made short and not to exceed four feet in height. Then

light your fire on the up-hill end, and if the windrows be very long, should the wind change and come down hill, the heat would be so great it would do great damage to the young growth; if the windrows are short and low down of course the fire would not be so large and the heat would not be so intense. Do not in any case allow the brush to lay longer than one winter and one summer. Should the brush lie two winters the bark becomes loose, the sapwood begins to decay and becomes spongy, so the first shower of rain or damp and foggy weather seems to soak it and it becomes so wet it is hard to obtain good results when the burning time arrives. In piling limbs, I would suggest, pile them straight with each other and then when burning they will settle down and burn clean. If cross-piled they are not liable to burn clean.

S. A. Shields.

News from the Ranger Districts

District No. 1

I have noticed in a number of places where petty burning is being carried on by a number of persons, setting small fires along roads and trails, in every instance the burned area not exceeding six square feet, with the exceptions of two places. One was in the Salmon range of mountains on Grizzly Creek where a party of geological surveyors had camped, a cabin being burned and a number of trees scorched by the intense heat, and another on Chaparral Mountain where one acre was burned over.

During the month of August and September seven miles of telephone line was completed and two boxes installed. This line is an extension of the Trinity River Telephone system, from Northfork to the Yellowstone Mine.

August 27 the wire was delivered on Blue Ridge for a forty-acre pasture, and Guard Adams brushed out the right of way for the fence. Through some mis-understanding however, the staples were not shipped and work was discontinued for the present.

August 29 the wire was delivered on Hayfork Bally for a forty-acre pasture. The first few days of September were devoted to the survey of the East Fork and Backbone Trail which is to be cooperative work between Trinity County and the Forest Service.

Work on all improvements was closed down indefinitely until more funds are available, or until the projects may be completed with guard labor.

Four days were devoted to the survey of the Trinity River Trail at Schnider's Bar, Since September 25 all the guards in this district have devoted their entire time to the improvement of trails.

Two days of this month were spent in the examination of two June 11 claims.

H. W. Brannan.

District No. 2

During the month of September we have had two small fires which burned over an area of a little more than one acre.

Royal Trimble and Sam Jackson, Guards, have finished the cleaning up of the Cold Springs Telephone line and the Short Cut trail, a distance of twelve miles. Guard Jackson and Ranger Woodhams gathered six pounds of incense cedar seed this month. Twelve miles of the Eltapom trail, extending from Hyampom through Eltapom towards Burnt Ranch, have been graded at the worst places and brushed out to the width of eight feet, and the brush burned. This work was also done by Jackson and Woodhams.

Messrs. Trimble, Woodhams and Bush have brushed out the Kinzey-Deer Creek Ridge trail about ten miles in length and to the width of eight feet. Ward and Griffitts, Guards, have burned the brush and finished the work on the Indian Valley patrol trail, a strip ten miles long and eight feet wide. In addition to this these two guards have kept active patrol and lookout of fires, built a comfortable frame house on the Indian Valley Ranger Station, and sowed the enclosure of six acres to timothy for pasture.

Mr. Woodhams had the misfortune of getting his horse shot while on patrol, and barely escaped being shot by the same bullet. Mr. Woodhams was leading his horse at the time and a hunter shot the horse in the forehead, blinding the right eye of the animal.

We are pleased to be able to report that E. R. Garrett is improving rapidly. He can get around now a little.

Wm. X. Garrett is on duty again, after recovering from his broken leg.

W. X. Garrett.

District No. 3

During the month of September we have had one fire, which burned over an area of fifteen acres and cost $4.50 for temporary labor. This is the largest fire we have had during the season.

During September twelve and one-half miles of telephone line from Peanut to the McCampbell place have been built, and also four miles of line from the McCampbell place up the East Fork of Hayfork. The California Medicinal Springs Company is going to extend this line on out to the Deer Lick Springs on Brown's Creek. It has purchased the material and made arrangements to have Forest Guards Ernest Duncan and Ivan Cuff construct the line when they have finished with the Forest Service work.

The ten-acre pasture on the Carr Creek Ranger Station will be finished by the 10th of October.

J. W. Patton.

District No. 4

There have been no fires in this district during September.

The work on the Tedock trail has been carried on by two men who have been improving the trail by cutting out the steep grades.

There is now being constructed a blacksmith shop at the White Rock Ranger Station by two temporary men and Forest Guard Bucklew. This shop will be completed in about two weeks.

Several miles of the telephone route for the telephone over White Rock Ranger Station to the Yola Bola have been looked over as a preparation for later work on the line. I hope to put up several miles of the telephone this year since six and - half miles of the wire are already on the ground.

The emergency line near Yola Bola lookout has been working very well. The other evening, however, a bear having become entangled in the line, played serious havoc with its usefulness by twisting up the wire quite a bit and stripping the insulation for several feet.

Harry Everest.

District No. 5

During the month of September we had two small fires, one on September 13 which burned over an area of three and one-half acres, and another on September 22 which burned over one-eighth of an acre. The first mentioned fire occurred on private land, the second on Forest land. A light rain falling on September 25 has eliminated the fire danger in this section temporarily.

All hands are now for a few days working on various improvement projects. In September we have completed the Mad River-Zenia Telephone line, fourteen miles in length. * Five miles of new trail have also been built along the South Fork and Grizzly Mountain Summit. We repaired several miles of old trail.

The timber to be used in the construction of the dwelling on the Mad River Ranger Station is now on the ground and work has been started. Ranger Shields is getting out timbers for the barn at the Grizzly Mountain Lookout.

Guard Kohnenberger, whose appointment terminated September 30, has left to take a position in San Francisco for the winter. All the other guards will be retained until October 15.

J. T. Gray.

* Mr. Gray sent in an excellent map showing the route of this line so that it can easily be transferred to the office maps. (Editor)

District No. 6

The one fire in this district, September 22, burned ¼ acre. On September 25 there was sufficient rain to wet the ground so as to eliminate the danger of fires in this distrit for the balance of the season.

Guard Martin has brushed out the Four Mile Trail from South Fork to top of ridge above Four Mile Camp, besides making some needed changes and cutting out the logs obstructing the trail.

Guards McNeil and Frazier are building a trail from Red Hill to Brett Corral on Trinity Summit. When completed this trail will shorten the distance from Willow Creek to Trinity Summit approximately two miles and will avoid climbing a big mountain.

Fourteen miles of telephone line from Hawkins Bar to Quinby will be completed during September.

Guard Graham has taken down the telephone line from Panther Creek Ranger Station to the Chamberlain place on Redwood Creek.

F. A. Graham.

District No. 7

One fire for September is our record. This occurred on railroad land. The expense of fighting it being paid by the railroad company, we are able to call it Class B.

Work has progressed in a very satisfactory manner since our last letter. Seven miles of trail have been completed along the summit of Trinity Mountain for a fire patrol, and the construction of more trail up the Stuart's Fork has been vigorously carried on by a crew of three good men, to the amount of $135.00 worth of labor. This trail will not be completed before another fiscal year on account of lack of money.

Assistant Ranger Box and Guard Thorne made a very successful trip to Weaver Bally for the purpose of taking up our temporary telephone line, and moving the lookout man's equipment to winter quarters. The boys ran into the first snow of the season, but with true ranger grit proceeded to coil up the wire, snow or no snow, and made a record trip out of it. They left Weaverville at 11 A. M. on the 26th, arrived at Picken's camp at East Weaver Lake at 5:50 P. M. The next morning they coiled 2 2/3 miles of wire, packed it out to where the horses could be driven, returned to Picken's camp, packed up everything and moved camp to the old Day and Hafley sawmill site that night. The next morning they picked up the remaining mile of wire, loaded everything onto the horses and arrived in Weaverville at 1:00 P. M. Our lookout man got through Saturday, September 23, just a little earlier than some of us figured he would, but say, boys, be a little

careful about discussing this matter with the supervisor.

We took advantage of the storm on the 25th and cleaned up some of the brush. Guards Viles, Thomson and myself burned the brush on the Siligo sale area.

District 7 has made two small timber sales this month, one amounting to $43.75 and the other $54.00. We have another 50,000 ft. sale in sight, and a possible 1,000,000 ft. sale for another summer to the Trinity Dredging Company. This does not sound so bad to the boys of District 7.

Guard Thorne has his flag flying from the top of his lookout tree at Buckeye No. 1. The tree measured 190 feet in height. The flag is flying twenty-five feet above the tree top. This tree, with Mr. Thorne standing in its top, holding to the flag pole, would make an excellent picture.

C. A. Chamberlain.

PERSONAL

Mr. Howard de Forest, who has been working with the reconnaissance party as temporary Forest Assistant, has been permanently assigned to the Trinity Forest as Forest Assistant. Mr. de Forest is a graduate of the Yale Forest School and is well trained to take up the scientific study of forestry.

Miss Williamson left September 24 for a visit to her parents at San Luis Obispo. During Miss Williamson's absence Miss Ruth Trimble, of Hyampom, will be employed as temporary clerk.

Deputy Supervisor Coffman left Weaverville on September 18 for an extended trip within the Forest. He has been with Assistant Ranger Garrett and expects after his present visit with Ranger Graham to spend a few days with Assistant Ranger Brannan.

Assistant Ranger Ballard R. Garrett was stricken with partial paralysis while in Eltapom Creek Country. Although seriously affected for a time, he is now recovering and hopes after a period of convalescence to be again on active duty.

Forest Assistant Jotter and Mrs. Jotter are to be congratulated on the arrival of a boy September 3.

Assistant Ranger Wm. X. Garrett is again in the saddle, although his broken leg has not entirely healed.

Field Assistants Bruff and Harrower have left the reconnaissance party for their respective homes. Mr. Bruff will continue his studies in forestry at the University of Nebraska, and Mr. Harrower takes the same

course of study at the State College, Pennsylvania.

List of Publications received since September 1

Forest Service Publications

California Tanbark Oak. Bulletin 75

Grazing and Floods, a Study of Conditions in the Manti National Forest, Utah. Bulletin 91

Colombian Mahogany, Its Characteristics and Its Use as a Substitute for True Mahogany.

Consumption of Wood Preservatives and Quantity of Wood Treated in the United States in 1910. Circular 186.

Relation of Light Chipping to the Commercial Yield of Naval Stores, by Charles H. Herty, Bulletin 90.

Other Publications

A review of the Laws Forbidding Pollution of Inland Waters in the United States, by Edwin B. Goodell, U. S. G. S.

Mineral Productions, County Maps and Mining Laws of California, Bulletin 60. Issued by the California State Mining Bureau, San Francisco.

Weir Experiments, Coefficients and Formulas, by Robert E. Horton, U. S. G. S.

The Quality of the Surface Waters of California, by Walton Van Winkle and Frederick M. Eaton, U. S. G. S.

California Hydrography, by Joseph Barlow Lippincott, U.S.G.S.

Methods for the Examination of Bituminous Road Materials, by Provost Hubbard. Bulletin 38, Office of Public Roads.

The Common Mole, by Theo. H. Scheffer. Kansas State Agricultural College Experiment Station, Bulletin 168.

The Pocket Gopher, by Theo. H. Scheffer. Kansas State Agricultural College Experiment Station, Bulletin 172.

Twenty-first Biennal Report of the Board of Fish and Game Commissioners of the State of California, for the years 1909-1910.

Game Laws for 1911, A Summary of the Provisions Relating to Seasons, Shipments, Sale, Limits and Licenses, farmers' Bulletin 470.

A Guide to the Birds of the Pacific Coast, by C. A. Stebbins, Bul. 2. Publications of the State Normal School, Chico.

Food of the Woodpeckers of the United States, by F.E.L. Beal, Bul. 37, Biological Survey.

Meadow Mice in Relation to Agriculture and Horticulture, by D. E. Lantz, Biological Survey.

Some Benefits the Farmer may Derive from Game Protection, by T. S. Palmer, Biological Survey.

Birds that Eat Scale Insects, by W. L. McAtee, Biological Survey.

The Game Warden of Today, by W. Williams, Jr., " "

The Blue Jay and Its Food, by F. E. L. Beal, " "

Destruction of Wolves and Coyotes, by V. Bailey, " "

Hawks and Owls from the Standpoint of the Farmer, by A. K. Fisher, Biological Survey.

The Meadow Lark and the Baltimore Oriole, by F. E. L. Beal, Biological Survey.

Deer Farming in the United States, by D. E. Lantz, Farmer's Bulletin 330, Biological Survey.

Seed-eating Mammals, by N. Dearborn, Cir. 78, Biological Survey.

Breeding Drought-resistant Forage Plants for the Great Plains Area, by A. C. Dillman, Bulletin 196 Bureau of Plant Industry.

Forest Nurseries for Schools, by W. M. Moore and E. R. Jackson, Farmers' Bulletin 423.

AN OFFICIAL ACCOUNT OF THE SAN BERNARDINO FIRE

In view of the many conflicting newspaper reports on the recent San Bernardino fire, District Forester Coert Dubois, who is in general charge ofthe National Forests in California, has issued the following authentic accoount:

The fire started about noon on Tuesday, July 25, from an unknown cause, on the west side of the road up Waterman Canyon. Within an hour and a half, three Forest rangers and seven citizens had reached the ground and brought the original fire under control with less than two and a half acres burned over. A separate fire, starting from a brand, blown from the main fire, had also been detected and extinguished. Another spark had evidently jumped across the road from the original fire when it was burning its hardest. This spark smoldered but did not show up in flame or smoke until some fifteen minutes after the first two fires had been brought under perfect control. The ten men on the ground attacked this third fire promptly and except for the high wind then blowing, they would have had no difficulty in conquering it.

Cases are very rare where fires escape from control after being reached by the Rangers as promptly as this San Bernardino fire. When the Rangers and fire fighters had this third fire almost under control, a furious gust of wind came up the canyon, scattered fire all over the hillside from the one half acre then burning, and forced the men to run for their lives. Except for this extraordinary wind, which eye witnesses say was a small hurricane, the fire would never have escaped and would have represented little more than a figure in annual fire reports and other statistics.

After the fire escaped, it burned with uncontrollable force during the remainder of the afternoon and covered over 500 acres by 6 O'clock Tuesday evening. Realizing that help was needed immediately, the ranger in charge when the fire escaped promptly telephoned to San Bernardino for men. Right here the protective system broke down. Naturally no Forest officer was in San Bernardino and no arrangements had been made in advance for the immediate dispatch of volunteer fire fighters or organized bodies of men in case of fire. The men telephoned for by the ranger were not sent. The small force of men on the ground fought without help twenty-one hours, or until 11 o'clock on Wednesday, July 26. Recognizing the hopelessness of the situation, two rangers then left the fire line and went to San Bernardino for men. The opportunity to conquer the fire had, however, been lost for lack of help during the first twenty-four hours. During the

second and third days of the fire, rangers and fire fighters labored unceasingly to control the blaze. They succeeded except in the head of a fork of Cold Water Canyon where the fire was burning fiercely on very steep ground covered with a dense growth of manzanita and thorn brush and where there was very little dirt to use in fighting the flames. Forest officers and fire fighters who have been over this ground report that the difficulties confronting the fire fighters at this point can not be understood by any one who has not actually been over the ground. Friday night, when the fire had been burning for a trifle over three days, a fire line was almost completed around the lower end and sides of the fire. Before the circle could be closed, a high north wind started to blow and scattered fire in new directions, undoing much that had been gained during the previous day's fight. The north wind blew for only two hours but in this time fire was so scattered that when the normal southwest wind again started up the fire was able to spread rapidly, despite the desperate efforts of the hundreds of men then on the line. North winds blew again at intervals during Saturday night, Sunday, and Sunday night. Each time the north wind blew, the fire was blown backward into positions from which, when the southwest winds returned, it could make uncontrollable rushes up the steep front of the San Bernardino range. By Sunday night the fire had spread to such size that the task of working the enormous length of the fire line was not completed until Monday, August 7, almost two weeks after the fire started.

When the fire started, Mr. R. H. Charlton, the Supervisor of the Angeles National Forest, was on one of his regular trips of inspection and field supervision. He promptly got in touch with hissubordinates who were in charge of the fight, but since they repeatedly reported that they expected no difficulty in conquering the fire, Mr. Charlton did not leave his regular work for several days. Deputy Supervisor Long was in Los Angeles in charge of the Supervisor's office when the fire occurred. When the fire had been burning twenty-eight hours he realized that the situation was grave enough to demand his personal attention and immediately started for San Bernardino to take personal charge of the work.

The organization of the fight at this fire was about the same as usually effected when large stubborn fires are being fought. On occasions of this kind, red tape is never a bar to prompt and effective action. At this fire men were employed, supplies purchased, and every sort of transportation arranged for both men and supplies without the dealy of any system of requisitions or approval of higher officers of the Service. The standing instructions to Supervisors and Rangers are to incur any liabilities necessary for the controlling of any fire on National Forest lands. At no time in the history of the San Bernardino fore was there any hesitation in securing men or supplies because of the expense or lack of authority of men on the ground to incur it.

A peculiar feature of this fire was the opportunity to use automobiles in transporting men and equipment. This very successful mode of transportation was used wherever necessary. The camps were kept well supplied with provisions and men went hungry only when they were unable to get to the camps.

Although no preparations had been made for the employment of such large bodies of men, numerous ingenious systems of organizing small crews, issuing and dispatching orders and handling men at camps were devised and adopted, notwithstanding the strain of the fight.

Men were employed at the standard rate of pay for this part of the country. 25¢ per hour was allowed for time consumed going from San Bernardino to the fire, for all time spent on the fire line, or in traveling between the fire camps and the fire line, and also for returning from the fire to San Bernardino. The statement that straight time at 25¢ per hour from the start from San Bernardino until the return was unauthorized and did not originate with any Forest officer. It is obvious that the standard Forest Service system of paying fire fighters by the hour would be nonsensical if payment were to be made for twenty-four hours a day.

Back-firing, when possible to practice it, is one of the most effective methods for fighting forest fires. This system was used whenever conditions of wind and slope made it safe, and miles of back-fires were set under the instructions of Forest officers. Back-fires are exceedingly dangerous weapons, however, and when indiscriminately or unintelligently used, are certain to spread the fire instead of aiding in its control. One of the most serious handicaps the Forest officers had to contend with was the setting of unauthorized back-fires by settlers who wanted to protect their own property but failed to take precautions against spread of the fires they had set.

Instructions against back-firing were usually respected by settlers and threats to use fire arms was not necessary and was not at any time resorted to. Some disastrous back-fires were set when no Forest officers were near to prevent it. One sawmill man back-fired around his property although he was not in the path of the main fire. He then started up his mill in disregard of possible damage his back-fire might do to others. Forest officers and fire fighters had to leave their work on the main fire to fight this back-fire but before they succeeded in bringing it under control it had, on account of the high wind prevailing at that time, run over two miles and joined the main fire.

On August 3, while the San Bernardino fire was still at its height, a disbursing agent was sent from San Francisco with a large sum of money to his credit in the U. S. Sub-treasury. He arrived in San Bernardino on the morning of August 4. Only straggling fire fighters were then in town awaiting payment and it was not until the night of August 5 that a Forest officer could be spared from the line to come into town and OK the time checks of the fighters. The disbursing agent started writing

checks on the morning of August 6 and kept it up until August 12, at which time he had paid all of the labor accounts except a few odd bills that had not been presented. Settlements of fire accounts in this case, as in all others, take precedence over all other bills.

The total cost of controlling the fire was in the neighborhood of $25,000.00, practically all of which was paid by the Forest Service. The total area burned over is a trifle under 19,000 acres. Two-thirds of this area is devoid of timber but was covered with a growth of brush of very great value to the water-using industries of the San Bernardino Valley. The damage to timber is less than would be expected - not over 5% of the mature timber and only half of the young timber between ten years of age and maturity being killed. Seedlings under ten years of age were, of course, consumed.

An investigation will be made to determine the best method of repairing the damage to the watersheds burned over, but as yet no plans have been made for planting the denuded hillsides.

At several different times, officers in charge of the fight as well as mountaineers who have had life long experience at the fire fighting game, believed they were nearing the end of the fight. That their expectations of success were not realized was due to the freakish winds. The judgment of Forest officers is only human and all experienced fire fighters recognize the difficulty of contending with high winds or forcasting the outcome of efforts to control a fire when a strong wind is blowing. Every specific charge against the men in charge of the fight has been carefully investigated by an officer from the San Francisco headquarters, and they have been entirely cleared of any suspicion of inefficiency.

Supervisor Charlton and Deputy Supervisor Long have had years of experience in fighting brush fires. They have been particularly successful in keeping fires out of the Forest under their charge. Last year the Angeles' record for prevention and prompt control of fire was the best in District 5, comprising California and Western Nevada.

Causes beyond the control of these men or the rangers who assisted them were alone responsible for the failure to extinguish this fire in its early stages.

As soon as it was found that there was no possibility of ordering out troops, (the authority for which was requested by the District Office), emergency bodies of fire fighters, each 20 to 25 strong, were assembled at Bakersfield and at Bishop and held "under arms" for two days. Luckily these were not needed, but if the need had arisen at least 100 men under the leadership of six experienced fire fighting rangers would have been rushed to the scene from nearby Forests.

The people and commercial organizations of San Bernardino, Redlands, and Riverside gave splendid cooperation in

bringing this fire under control. They are entitled to the sincere thanks of the Department and the people of Southern California who are benefitted by the protection of the San Bernardino Mountain Range.

A number of valuable lessons can be learned from this fire. A study of its history indicates the need, first of all, of closer cooperation between the people of Southern California and the Forest Service. If citizens and employers of labor will organize themselves into protective associations and agree in advance to send help immediately on receipt of notice that help is needed on a fire, assurance can be given that the history of the San Bernardino conflagration will not be repeated. The construction of trails, fire lines, the purchase and storing of tools and other equipment at strategic points, the employment of additional patrolmen - all these measures will help, but the appropriations made by Congress are not large enough to do everything at once that should be done. The people of Southern California must cooperate even more liberally than they have in the past if fire is to be kept out of the mountain ranges.

RECONNAISSANCE

We call his work reconnaissance:
A shorter, uglier word perchance,
Would better serve the new man's use
To circulate his heartfelt views,
When first he hits the higher hills
And suffers pedatory chills.

At first each separate "forty" seems
A mile across; each "corner" gleams
A diamond in a world of night:
The tyro thinks: "This run's a fright,
I'll never see the camp again -
My Kingdon for an aeróplane! "

His legs are stiff, his feet are sore,
He carries bruises by the score;
Each day's a crises in his life,
An aeon of unending strife:
And even as at night he dreams,
The cook, with "Breakfast ready", screams.

He curses out the "rotten chick",
And figures he's clean out of luck,
Nurses a grouch exceeding glum
And wishes he had never come;
Like Job, his last despairing cry:
"I'll curse the government, and die! "

But as the season wears along
He finds he's growing hard and strong,
The steepest peaks with glee attacks
And gaily, skillfully he tracks
The elusive contour to its death
Nor pauses once to gasp for breath.

His attitude is altered quite,
The work's a cinch, the world is bright,
He has a glance for towering trees,
For rocks and streams, the mountain breeze
For him is musical, he'd fain
A-cruising all his days remain.

And when he's ordered back to town
And on some district settled down,
He'll say: "This ranger job's all right,
You get to sleep in bed at night,
But I'd sure like another chance
At working on reconnaissance."

W. P. Lawson.

To the Gila News Letter.

Pinchot Milford

THE TRINITY FORESTER

Vol. II - Weaverville, California, March 1, '12 - No. 1

PERSONNEL

OFFICE - Weaverville, California:

W. A. Huestis, Forest Supervisor.

J. D. Coffman, Deputy Forest Supervisor.

E. V. Jotter, Forest Assistant.

H. de Forest, Forest Assistant.

O. H. Evans, Forest Guard.

Laura C. Williamson, Forest Clerk.

Regina Emmerich, Forest Clerk.

ASSIGNED TO DISTRICTS:

No. 1 - H. W. Brannan, Asst. Forest Ranger, Big Bar.

No. 2 - Wm. X. Garrett, Asst. Forest Ranger, Hyampom.

No. 3 - J. W. Patton, Forest Ranger, Peanut.

No. 3 - Edward Elmgren, Asst. Forest Ranger, Knob.

No. 4 - Harry Everest, Asst. Forest Ranger, Knob.

No. 5 - John T. Gray, Forest Ranger, Ruth.

No. 6 - Frank A. Graham, Forest Ranger, Chinaflat.

No. 7 - Clarence A. Chamberlain, Forest Ranger, Minersville.

No. 7 - Reuben P. Box, Asst. Forest Ranger, Minersville.

The following changes in personnel have taken place since the October issue of this magazine:

Laura E. Williamson returned from leave of absence November 13, 1911.

Ruth G. Trimble, Temporary Clerk, appointment terminated November 11, 1911.

Elsie C. Shoup resigned December 19, 1911.

Regina Emmerich appointed December 20, 1911.

District 1:

Wm. J. Adams, Forest Guard, appointment terminated October 15, 1911.

Julius Brannan, Forest Guard, appointment terminated October 31, 1911.

David W. Haas, Forest Guard, appointment terminated October 15, 1911.

Allan L. Petersen, Forest Guard, appointment terminated October 15, 1911.

J. R. Sorenson, Assistant Ranger, appointment terminated October 31, 1911.

District 2:

Howard H. Griffitts, Forest Guard, appointment terminated October 15, 1911.

Samual Jackson, Forest Guard, appointment terminated October 4, 1911.

Edward L. Ward, Forest Guard, appointment terminated October 4, 1911.

William H. Woodhams, Assistant Ranger, appointment terminated November 16, 1911.

District 3:

Charles H. Crews, Forest Guard, appointment terminated September 30, 1911.

Ivan A. Cuff, Forest Guard, appointment terminated October 31, 1911.

Ernest E. Duncan, Forest Guard, appointment terminated October 15, 1911.

William C. Duncan, Forest Guard, appointment terminated October 15, 1911.

Gilbert J. Jackson, Assistant Forest Ranger, appointment terminated October 15, 1911.

Edward E. Smith, Forest Guard, appointment terminated October 10, 1911.

District 4:

Frank D. Bucklew, Forest Guard, appointment terminated October 31, 1911.

Alva Tracy, Forest Guard, appointment terminated November 15, 1911.

John R. Watson, Forest Guard, appointment terminated October 4, 1911.

District 5:

Albert F. Gray, Forest Guard, appointment terminated October 15, 1911.

Oscar O. Hays, Assistant Forest Ranger, appointment terminated November 16, 1911.

Joseph Hutchens, Forest Guard, appointment terminated October 15, 1911.

Samuel A. Shields, Assistant Forest Ranger, appointment terminated November 16, 1911.

District 6:

Charles W. Beebe, Forest Guard, appointment terminated October 17, 1911.

Albert A. Frazier, Forest Guard, appointment terminated October 31, 1911.

John W. Larson, Assistant Forest Ranger, appointment terminated October 31, 1911.

District 7:

George Thorne, Forest Guard, appointment terminated October 31, 1911.

Bruce P. Viles, Forest Guard, appointment terminated October 31, 1911.

Reconnaissance:

Rufus Hurn Holland, appointment terminated October 31, 1911.

Transferred to Statutory Roll:

Edward Elmgren, Assistant Forest Ranger, appointment effective October 1, 1911.

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EDITORIAL.

We have just heard of the death on February 14, of Ballard R. Garrett who has been ill since last fall. The news is received with sincere regret and the members of the force on the Trinity National Forest herewith extend their sympathy to the family.

Mr. Garrett began work as a Forest Guard in 1906 and was at the time of his sickness a Deputy Forest Ranger at Hyampom on this Forest. Here he was well liked by the people and in the performance of his duties ranked as a loyal and faithful officer.

This office has recently received two more sectional units for the library bookcase. In our library there are now over fifty volumes dealing with forestry and related subjects, and thirty-two of the regulation binders filled with Forest Service and other Government publications. Naturally, the Forest Service does not go to the expense

of providing this literature for the sole purpose of filling a bookcase. All professions find it absolutely necessary to keep in touch with the new ideas and recent investigations. What physician, what agriculturist, does not take periodicals dealing with his especial interests. There are none of us too old to learn, nor do we know it all; nor on the other hand can it be said that there is no time. One hour of careful reading each day will result in a great total at the end of this winter.

While it may not be possible to invest in much literature, please bear in mind that our library affords many opportunities for study in forestry.

List of publications received and not previously noted:

Bul. 100 - The Crater National Forest, Its Resources and Their Management.

Cir. 110 - Treatment of Artificial Tree Plantations.- Secrest.

Bul. 40 - Road Material Resources of Minnesota.- Cooley.

Cir. 122 - Prevention of Sap Stain in Lumber.-Weiss-Darnum.

" 127 - Manufacture and Utilization of Hickory, 1911.- Hatch.

Bul. 152 - Scabies of Cattle.- Hickman.

" 436 - Forestry in Nature Study.

" 92 - Light in Relation to Tree Growth.- Zon-Graves.

" 98 - Reforestation on National Forests.- Cox.

" 102 - Identification of North American Oak Woods.- Sudworth-Hall.

" 103 - Distinguishing Characteristics of North American Gumwoods.- Sudworth-Hall.

" 139 - Strength Values for Structural Timbers.- Cline.

" 491 - The Use of Concrete on the Farm.

Report of the Forester, 1911.
Report of the Solicitor, 1911.
Instructions for Cooperative Observers.- Moore. (Weather Bureau.)

EDUCATION:

The answers to the grazing questions show that most of the men have studied the Manual very carefully and that the revised regulations are well understood.

Although it is not considered an absolute requirement that these questions be answered, there is a feeling, nevertheless, that the men who have answered the questions are most interested in their work. It is absolutely certain that a careful study of this Manual makes a man better qualified in his position as Ranger.

The practical nature of this year's education course and its application to everyday work make it more definitely valuable than a study of a more technical nature.

We hope that the answers on grazing will soon be received from all the Rangers.

EXCHANGES:

The following news letters have been received since our last appearance. They are all exceedingly interesting, as well as helpful, since we have received some valuable pointers from them:

The Apache News.
The Alamo Adviser.
The Coeur D'Alene Forester.
The Stanislaus Review.
The Sierra Ranger.
The Modoc Review.
The Pike News.
The Tahoe.
The Plumas News.
The El Dorado Exchange.
The Gila Newsletter.
The Cliffdwellers' Echo.
The Mono Ranger.
The Lassen Magazine.
The Datil Tri Monthly.

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We do not feel like apologizing for the delayed appearance of the Trinity Forester, since it is our declared policy to publish this paper about every other month unless there is too much other work.

This month it was necessary to cut down some of the contributions and to postpone publishing some articles. We hope to include these in our next publication, together with a few of the points brought out in the Rangers' Meeting.

ORGANIZED FIRE PROTECTION

By W. A. Huestis,

Supervisors' Meeting, San Francisco.

It goes without saying that success in fire protection as in anything else worth while, means organization and system. At present one of the chief difficulties to be met with in the organization of an effective patrol system, is that of securing men who are fitted for the work. To get the greatest efficiency means that every man must do his best. To take inexperienced and untried men from everyday affairs is apt to result in impaired efficiency.

For a fire patrol organization to reach its highest state of usefulness every man must be active, keenly alert, trained to the work, and responsive to discipline. Such a perfect organization at present, seems out of our reach. Our forest work is not intensive enough to carry an ideal protective organization. Only development can remedy this. Under our current conditions, a small regular working force must be added to heavily, by a fire patrol organization, for a few months of each year.

The problem that confronts the Supervisor is how to accomplish maximum protection at a minimum cost. If I were asked to outline briefly, what was needed for a perfectly safe fire protection plan for a heavily wooded forest, I would say to begin with,- a trained body of mounted men, organized and equipped for fire fighting and patrol. These men to be stationed in small squads at strategic points all over the Forest; a system of trails and roads so devised that the men could be moved rapidly in any direction, at a moments notice; lookouts for the high peaks with a few stationed on lower elevations where more detail is necessary; riding patrol from the equipped stations to cover the routes of travel and most dangerous areas. The whole scheme to be tied in with a properly devised telephone system which will permit of immediate communication throughout; sufficient supplies, horsefeed and fire fighting equipment, to be kept at the stations to provide for both regular and emergency use. This arrangement of men to be divided and operated by districts, the whole to be commanded from a properly located center.

This approaches military methods but it is my belief that the Forest Service can never hope to guarantee absolute fire protection at reasonable cost, in hot and dry climates without the cooperation of the military arm of the Government.

With this organization and equipment, one hundred men operating during the dangerous fire period should make safe a Forest of fifteen hundred thousand acres.

The Trinity Forest embraces an area of 1,027,300 acres. It is divided into seven administrative districts and has nine permanent rangers. The largest district has an area of approximately 212,000 acres and the smallest, of approximately 174,300 acres. With but one exception each district ranger headquarters is centrally located. A system of trunk telephone lines these headquarters all together and brings them into communication with the Supervisor's office. To make the trunk lines work properly it was necessary to bring them to one center and to establish an exchange. The lookout peaks and patrol stations are being connected with the main lines by spurs, as fast as means will permit. Eventually the telephone system will be completed, bringing every patrol station and necessary lookout into telephone communication.

Seven main lookouts on high peaks have been definitely decided upon, - six of which were in actual use last season. These command the entire Forest. A few secondary lookouts will be established giving clearer detail on valuable stands of timber on which the fire risk is great.

Small, strong cabins are being built directly on top of the mountains for the lookouts, as rapidly as the money is available. In addition to the standard telephone set installed, the lookout is supplied with a Forest Service standard compass, field glass and map of the Forest. Also a small supply of fire fighting equipment for emergency use. At those lookouts where the store keeper would not deliver food supplies, a Forest Guard has been detailed to do so when necessary. A lookout point is never left unmanned. The lookout should be thoroughly familiar with the country he overlooks.

Taking cross country shots at a fire with the compass, from different lookouts has worked out well on the Trinity.

Patrol stations have been selected with the object of providing a base of supplies as well as a riding headquarters. Full advantage has been taken of present roads and trails, wherever possible. In order that supplies and horse feed may be delivered at the lowest cost.

Small cabins and barns with fire to twenty-acre pastures are being constructed as fast as possible. These stations, during the fire season, are supplied with a limited fire fighting equipment and in a few instances where it is necessary, with emergency food supplies.

From three to six of these patrol stations have been selected for each Ranger district, with the District Ranger's headquarters a more or less geographical center. This makes each different ranger headquarters a central point of control and the telephone system has been devised to make telephone communication within each district as direct as possible. A large supply of fire fighting equipment is kept at the District Ranger's headquarters and from $50 to $100 worth of food supplies, where there is no store to draw upon. The reconnaissance party was supplied with a fire fighting equipment and were in readiness to become fire fighters at a moment's notice.

Telephones have been installed at important ranch houses and stores, which has strengthened the plan materially. Local mail contractors with star routes are giving valuable assistance by reason of telephone privileges being extended to them, aiding them in their private business.

In carrying out field improvements construction it was planned in every instance, where possible, to so time this work that the temporary men employed could be used as fire fighters should they be needed.

Orders for improvement material were placed somewhat in advance of the beginning of the fiscal year and the material gotten on the ground as quickly after July 1 as possible. Only enough men were employed on each project to carry the construction work through the dangerous fire period. Men so employed were paid wages that enabled them to furnish their own camp outfit, and they were in readiness to become fire fighters at any time. The importance of working this into a protection scheme, should be given the fullest consideration, its value of course depending on the size of the improvement allotment.

As stated before, a well organized body of men is necessary to the success of a fire protection plan. However, a few men, no matter how well trained, organized and equipped, cannot successfully protect a large area where the fire risk is great. We already have these few men in our regular permanent ranger force. On such a Forest as the Trinity, the question is how to get the largest force in the field during the period of the greatest fire risk. After carefully reviewing the entire situation, a number of men was decided upon that could be provided for under our General Expense allotment. There were five six-months men, beginning May 1, seven five-months men beginning June 1, twenty-one three-months men beginning July 1, five two-months men beginning August 1,- a field force of 38 men added to our nine permanent men. This gave a total field force for the Trinity for the three months beginning

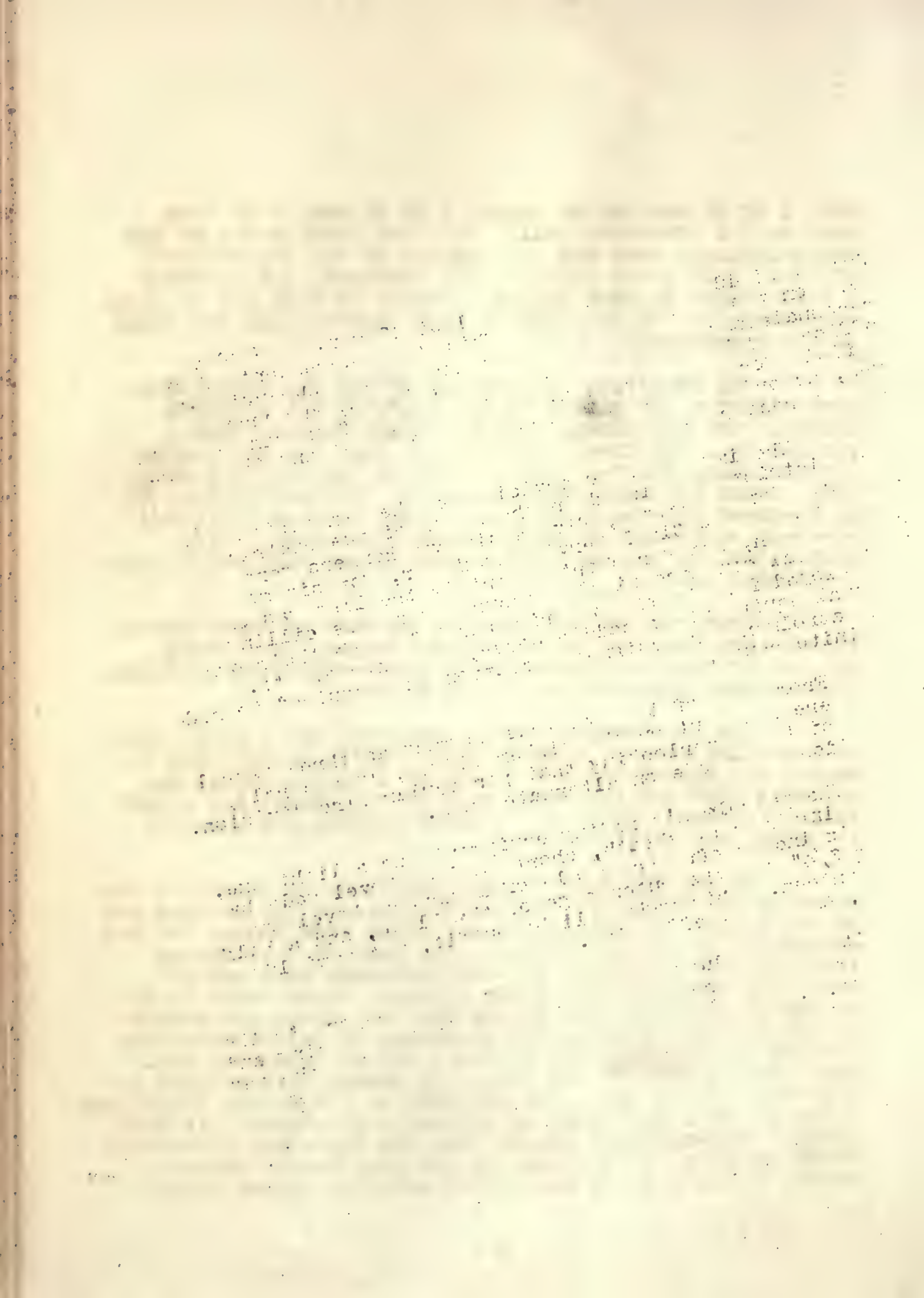
July 1 of 42 men and on August 1 of 47 men, 9 of whom were on the statutory roll. This was independent of the reconnaissance crew and the members of the Supervisor's office. This total included the lookouts, and provided a field force in each ranger district of from six to eight men, according to the risk of each district and the value of the resources.

The immediate supervision of the men assigned to each district was placed in the hands of the District Ranger. For patrolmen, five Assistant Rangers were secured from the Civil Service register, for six months service each, but for shorter periods the list was of no use. Local men were finally secured who were willing to be employed for the short periods and furnish their own personal equipment of saddle horse, pack horse, etc. Each patrolman was assigned a station and required to ride a definite route.

From some of the stations as many as three patrol routes were laid out on the higher ridges, in a circle, and all of them overlooking that particular fire division. These rides were made on alternate days.

The patrolman's riding equipment was a light axe, in a marking hatchet sheath, short handle shovel made by sawing six inches off the handle of a Carter shovel and trimming 3/4" off the outer edge of the blade, and a half gallon canteen. This made a light outfit, not unwieldy to carry, and still effective.

It was the duty of each patrolman to report to the District Ranger before leaving quarters in the morning and on his return, as well as at any other time during the day whenever a phone was reached. The part of this system that does not harmonize is that patrolmen were out of telephone communication while riding. There seems to be no way of avoiding this at present, but where the number of men is very limited, the advantage of patrol more than offsets the disadvantage of being out of telephone communication a part of the time. At least, this applies in a broken country where men can ride on the higher elevations which obtain a good view of surrounding country. It frequently happendd last season that the patrolman discovered fires before they were seen by the lookouts. Lookout patrol on the Trinity has proved superior to any other.



A few residents and settlers, favorably located, were permitted on our telephone system, for the purpose of supplying as far as possible, a reserve force to aid our patrolmen when necessary. This was sometimes unsatisfactory aid but has worked rather well on the whole.

Such a system of fire protection built onto the regular Forest force necessarily interferes seriously with administrative work and at the season of the year when the field work should be done. Under this arrangement the District Ranger must be in control, and keep in close telephone touch with the situation. Perhaps this can be remedied when such intensive use of our Forest is made as will permit of separating the protective and administrative work.

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INSECT INFESTATION IN HAYFORK WATERSHED.

A very serious infestation of the yellow pine timber by insects has developed in Ranger District No. 3. The heaviest infestation occurs over the plain and hills of Hayfork Valley, but extends also up into the yellow pine timber on the higher slopes of the Hayfork watershed.

In addition to the work of the insects, the leaf fungus Lophodermium appears to be at work on the yellow pines. This damage has not been examined by a plant pathologist, but samples of the infected needles are being sent to the District Forester for examination and it is hoped that a representative of the Bureau of Plant Industry will be able to pay a visit to the infested region during the spring or summer. The needles killed by this fungus hang on the tree for a considerable time after they die and on hundreds of trees the needles have all been killed except those of last season's growth; on such trees these dead needles far outnumber the green needles, giving the trees a sickly yellow appearance. Like the insect damage, this fungous injury is most pronounced in the Hayfork valley. Widespread injury from this cause, observed in connection with the large number of trees killed by the beetles, has attracted the attention of all residents of Hayfork Valley and has caused considerable comment as to the unhealthy appearance of the stand.

This needle fungus, by partial defoliation of the trees, will undoubtedly check their rate of growth. If the fungus attack dies out it is very likely that the trees will resume their normal appearance and rate of growth within a few years. If the attack continues year after year the trees may possibly weaken sufficiently to induce an attack by flat-headed borers or other enemies. The needle fungus alone would probably not be sufficient to entirely kill the trees. Further information as to the effect of this blight will be available after the advice of a pathologist has been secured.

The most serious injury, however, and the one involving the greatest loss of timber, is the work of the tree destroying beetles. The chief agency of this destruction is the western pine bark beetle, Dendroctonus brevicomis. The adults of this beetle girdle the trees when they make their egg galleries. The larvae feed in the bark and change to the adult state in the outer bark and then leave the tree during the spring and summer and infest new trees. Yellow pine trees of any size from saplings to the largest mature trees are subject to attack. A good description of this beetle and of its work and habits is given by Mr. Hopkins in the reprint from Bulletin No. 83, Part I, of the Bureau of Entomology, a copy of which should be in each Ranger's library.

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

Control work is at the present time being carried on by the Forest Service and the Southern Pacific Company on the Klamath National Forest in yellow pine infested by Dendroctonus brevicomis and the flat-headed borer. The method used is to cut down the infested trees during the winter, lop off the branches and pile and burn with the infested trunk. This will kill all beetles in small trees and in the tops of large trees. The lower portions of the trunks of large trees are peeled in order to expose and kill the beetles. Where stumps are also infested they are likewise peeled.

Entomologist John M. Miller of the Bureau of Entomology, who has been connected with the control work on the Klamath, visited the Hayfork region during the last of February. He said the damage by bark beetles and flat-headed borers in the Hayfork valley was the worst he had yet seen. A half-section was cruised near Big Creek Ranch in the region of the heaviest infestation. On this half-section 69 infested trees of a diameter of 12 inches and over were tallied. In addition to these there were approximately 200 trees below 12 inches in diameter that were infested. While this average will not hold out for the entire valley, yet it is safe to assume there are 1,200 infested trees on the plain and low hills about Hayfork.

As Mr. Miller pointed out, the only way in which to go about control work is on a basis of natural physiographic units. After the infestation by these species is brought under control over a whole watershed it should be safe to assume that we can keep it under control there in the future. To clean out the infested trees over a portion of the watershed and leave the balance of the watershed infested would be like putting out only a portion of a fire,- the infestation would spread back from the infested area to the clean forest. For this reason, although the heaviest infestation is in the Hayfork valley, it would be folly to clean up that part of the watershed where the poorest of the exposed timber is located and allow the work of destruction to continue on the upper slopes where the more valuable timber is situated. In order to secure effective control it will be necessary to cut out the infested trees over the Hayfork valley and the entire watershed of the Hayfork drainage area above that region, extending to the divide between Big Creek and Trinity River on the north, to the divide between Hayfork and Browns and Cottonwood Creeks on the east and south, and to the divide between the Salt Creek and Post Creek drainage on the southwest. This includes an area of approximately 164,000 acres. Mr. Miller believes that an estimate of 2,000 infested trees would be conservative for this area. In order to insure

effective control, this whole watershed should be cleaned of infested trees during one winter. The work of these beetles goes on at about the same rate each year so that it is safe to assume that each year we will lose at least 2,000 yellow pine trees 12 inches and over in diameter unless some steps are taken to control the infestation. The cost of cleaning out the infestation over the entire watershed during one winter would probably not amount to the loss caused by the beetles in two seasons' work. If, therefore, the value of the timber lost each succeeding year amounts to from one-half to three-fourths of the expense necessary to clean up the region in one season, the tremendous saving of timber which will be effected by the control work can be readily appreciated. For this reason we entertain strong hopes that the Bureau of Entomology will recommend to the District Forester that control work be undertaken over the area of the Hayfork watershed next winter. On account of the large number of trees and the large area involved it will not be practicable to attempt this control work this spring since it could not be completed before the beetles start to fly, and in that event the work we do accomplish might avail but little. A small percent of the infested trees will necessarily be overlooked in this general clean-up but after the majority of the infested trees are eliminated the small number of infested trees that will be present the next winter can be located and treated by the regular force.

It is only recently that the importance of insect control work has been realized, and even now it is not realized fully. On many Forests the annual loss through insects approaches closely the annual loss through fires, yet in the past we have been inclined to assume that this loss was unavoidable and have taken it as a matter of course. In the future, however, it should be our aim to acquaint ourselves with the nature and extent of this insect work and to take all possible steps in preventing its continuance and spread. It is quite important to learn to distinguish by the color of the foliage, the work of woodpeckers and other signs, the trees which are infested. A record should be kept in each Ranger District of the location of infested trees, since this information may be of value in control work which we might be able to exercise ourselves if it is on a small scale. If the infested trees over 12 inches in diameter run 4 or 5 trees to the section, it should be considered of sufficient importance to warrant a special report to this office, together with samples of the insects and their work.

Our awakening to the importance of this insect damage has been so recent that at the present time we do not know to what extent our entire pine belt may be infested. We believe that our reconnaissance crew can secure valuable information for us in this respect for the country they will cover during the coming season. In addition, we hope to be able to induce the Bureau of Entomology to detail

an expert for an examination of the remainder of the pine belt of this Forest during the coming summer, so that if any other extensive areas of infestation are found he may be able to make a working plan for the Forest by watershed units, by which we may in the course of several years of control work put a stop to this large annual loss of timber.

Whenever occasion presents itself, we should endeavor to correct the false impression that prevails in the minds of many and is often expressed by them, namely, that the prevelance of timber destroying insects is due to the suppression of Forest fires. Injury by fire encourages the entrance of destructive insects into the injured trees. A ground fire would have no possible destructive effect upon the bark beetle and flat-headed borers unless it were sufficiently hot to scorch the cambium and kill the trees, also. The only fire hot enough to kill these insects is a crown fire, which would destroy the forest as well. The insects which would suffer destruction from surface fires would be those living in down and decaying timber, which are not the ones usually that attack and kill the live trees. Surface fires could have no possible beneficial effect upon the control of the insects which are the chief agents of destruction of our yellow pine, since these insects from the egg state to the adult beetle live under or within the bark of the trees. The western pine beetle infests all portions of the trunk of the tree, or if it neglects any portion it is more likely to be that near the base of the tree, since many trees are infested by this species only in the upper portion of the trunk: the absurdity of fires for its control will, therefore, be evident.

Every kind of tree, like every kind of animal, is subject to the attacks of destructive agencies. There is nothing peculiar in the fact that the yellow pine has insect enemies as well as our fruit trees. There is no more reason for sending a fire through a forest to kill bark beetles than there would be to run a fire through an orchard to kill insects which might be within the twigs or under the bark of some of the trees. Such treatment would do a great deal of damage to the entire stand and would do no harm to the insects we are after. Any treatment to be effective must be given to the individual trees.

Some insect infestations run through cycles, the insects increasing in numbers very rapidly through a period of years and doing a vast amount of destruction, and then for some reason disappearing almost as quickly as they appeared. Others, like Dendroctonus brevicomis and the flat-headed borer, work along at about the same rate or

slightly increasing rate year after year. The work of these beetles has been going on for a long period; the large number of dead trees in all stages of decay bears evidence to this fact both in this and on other Forests. The sudden realization of the extent of the damage in this case is due in large part to the presence over the Hayfork valley of the needle fungus, which created the impression that the greater portion of the stand was being rapidly killed off by the same agencies that were responsible for the present dead trees.

J. D. Coffman.

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WORKING PLANS.

This account aims to give some explanation of Forest Working Plans as described in two articles written by Mr. Barrington Moore of the Forest Service, recently appearing in the "Forestry Quarterly" and the "Proceedings of the Society of American Foresters."

These articles contain much more than may be spoken of here and form a valuable contribution at the present stage of development of the National Forests, especially when considered in connection with the new Service instructions on pages nine to twelve of the Section of the National Forest Manual entitled "Forest Plans, etc." It must not be thought that the working plan scheme as given by Mr. Moore represents a definite form now in use everywhere by the Forest Service. On the contrary some of this,- chiefly the basis upon which a Forest shall be considered in several divisions and what these divisions shall be called,- is not yet a fixed thing.

The main object of Forestry, as all really interested in it know, is the business of so running any Forest that it will as soon as possible be of continuous use to people who need its products. On all Forests bigger than woodlots and, of course, on large Government forests, it is necessary to make some sort of a plan for doing this. No business large or small can be run successfully without management. This written up scheme of management is the Working Plan.

Aside from the necessary plans for the protection and improvement of the forest, and the manner of running the business, (administration) the main feature of a working plan is the technical one of so regulating the cut of timber on the forest as to make the forest give a "sustained yield", that is to say, produce timber right along, "indefinitely" as is said.

As the area dealt with is big, certain divisions of it are first made. These are:

1. Working Circles.

Different areas each of which can be made to give a "sustained yield." They are not circular, the word"circle' being used for other reasons.

2. Blocks.

Divisions of a working circle.

3. Compartments

Divisions of blocks.

These terms are not fixed ones yet. Occasionally the working circle appears under another name entirely. Compartments, in the sense in which the word seems to be used by Mr. Moore,- that is, as a small division of the forest, say a logging unit involving only one year's cut, will probably not be needed on National Forests for some time to come, so nothing further need be said of them here.

Let us consider the working circle and the block separately. The basis on which a Forest is divided into working circles is made up of three things. These are:

Geographic situation.
Markets.
Ability of the forest area that it is intended to include in any one working circle to produce timber right along, indefinitely.

By this, any area of a forest forming a sort of unit by reason of its topography, and supplying a certain market, and able to produce timber right along would be made one working circle. For instance here on the Trinity Forest, the Stuart's Fork Block and Cottonwood Block, of the present system of considering the Forest,- this being an area able to produce a timber crop right along,- sending, under advanced management, its surplus over local demands to Sacramento Valley markets, might form one working circle. The different working circles are called divisions. This then might be called the Valley Division of the Trinity National Forest.

Another instance readily coming to mind is that of the present South Fork Block which might alone be the South Fork Division. Again, parts of Ranger districts five, two and perhaps part of six, might form a working circle known as the Humboldt Division or the Coast Division of the Trinity National Forest.

These are not, of course, suggested changes. They are only rough examples given to make this idea more real. They are rough because any exact example would need some knowledge of the rate of growth of the Forest in its different parts in order to know what it is yielding, before deciding what parts of it would produce timber regularly as a crop, in sufficient quantity to justify considering these parts as separate units of the whole forest, each to be handled differently to make it produce its crop.

While the boundaries of any working circle depend largely on topography this is not the only factor it must be remembered. In a flat country it might not enter into the problem. Two parts of a forest, both capable of producing timber right along, supplying different markets, possibly separated by distinct topographic boundaries, might be made two different working circles. The thing of prime importance is that each one will need a different method of regulating the cutting of its timber so as to make it produce timber right along. In the future, when the management of a National Forest needs to be more intensive, still other points will be considered when dividing a forest into working circles. These will be such things as different forest types--yellow pine type, Douglas fir-yellow pine-sugar pine type, etc.- also different ways of cutting the timber so as to make it reproduce itself, called "Silvicultural systems"--clear cutting, selection system, etc.-- and the kind of products wanted from the forest--saw timber, mining timbers, cordwood, etc. On the other hand on some National Forests today, any divisions into working circles is unnecessary. On these the division into blocks made up of logging units is sufficient.

The Block is a division of a working circle made to help in arranging the cutting of the timber. Any one working circle might be divided into several blocks each of which would be cut over in a single cutting period, say of ten to thirty years, depending on the amount of timber to be got out. The basis for dividing a working circle into blocks is, then:

Logging units, or groups of these.
Topographic boundaries.

For instance, on the Trinity Forest, Big Creek, Barker Creek and Carr Creek might form one block, or Big Creek alone might form one, smaller block. In the latter case it might be known as Big Creek Block and would include the whole area of the Big Creek drainage.

There is a strong necessity today for deciding on all this when first making up a working plan for any forest. Before drawing up any working plan there must be known--

Present market conditions.
Lines of transportation.
Outlets for timber.
Probable changes in above three things.

No working plan whatever is a fixed affair. It is subject to revision whenever changed conditions demand and to some extent it should foresee changes. Take the example given by Mr. Moore: Suppose an area now supplying or able to supply a certain market, forming now, say, one working circle. Suppose that there is the possibility of a railroad being built in such a way as to pass by this area on the side furtherest from its present market. In this case certain whole blocks, or certain logging units of some blocks, would become easily marketed by the railroad. The point is that now, in advance, there ought to be foreseen, more or less exactly, another arrangement,- larger logging units, possibly combinations of some of the old logging units, making larger blocks, possibly also making fewer blocks,- to meet the new conditions. Hence there should now be decided upon:

(a) Blocks of logging units for the present market.
(b) Blocks of different and larger logging units for use in case the possible railroad is really built.

Working plans can provide for accessible parts of a forest-- the part where reconnaissance work can be done very thoroughly--in detail, and outline rough plans for inaccessible parts from the best available data, such as ocular estimates by Rangers, grazing maps, any silvicultural information that can be got, and, later on, it is probable that more information can be had, at least for a part of the present inaccessible area.

As reconnaissance work is now being carried on to such a large extent on National Forests its place in a forest working plan should be noticed. It is important to understand its relation to the other parts of the complete plan. The estimates made are not, of course, the basis for sales of timber - that is on the scaled amount, what is actually got. Reconnaissance is a sort of stock-taking, somewhat like the stock-taking of a good store-keeper around the first of the

year. It is only somewhat like this because a good timber reconnaissance, besides the actual stock-taking, the estimate, furnished a mass of information concerning the condition of the stock and of the place where it is located. The working plans officer should always consider ranger districts, fire protection districts, grazing districts, and have these make up his working circles and blocks so far as strong effort will permit. He should not, however, sacrifice the working circles and blocks too much for the sake of these because, as National Forests are developed further, these districts are very liable to be changed, and a working plan aims to look ahead.

In order that the relation of one part of a working plan to another, and especially of timber reconnaissance to the others may be easily seen, there follows a brief outline of a plan. Hence parts four to eight of what follows, important as they are, are merely stated without any subheads or words of description.

Introduction.
Location and relative importance of the forest.
Status of the land--patented lands, etc.
Uses, settlements, mining, waterpower, grazing, etc.
History of the forest.

Then the following for each working circle.
Name and area.
Amount of work done on it.
Methods of work.
Cost of work.

Part I. General data.
Physical features.
Geology, soils, climate (Timber reconnaissance)
Social and industrial conditions.
Forest description (Timber reconnaissance)
Use.
What is needed from it by public.
Methods of removing lumber, etc.
Income and expenses.

Part 2.
Maps and estimates of timber.(Timber reconnaissance)
Brief description here. Maps and estimates put in an appendix at back of plan.

Part 3. Working plan itself.
Objects of management.
Silvicultural systems to be used.
That is, methods of cutting to make the forest reproduce itself.
Parking rules. Very important.
Brush disposal.
Regulation of the yield.
Under this a number of headings, all of a very technical nature and not able to be explained in a short article.

Part 4. Planting plan.

Part 5. Administrative plan.

Part 6. Fire-protection plan.

Part 7. Permanent-Improvement plan.

Part 8. Grazing plan.

The main part of the working plan is made as brief and clear as possible, anything needing further explanation being treated more fully in the appendix at the back. Here might be put such things as growth studies of different species, silvical notes on the species, etc.

Once more, let it be understood that this represents in its divisions of a forest into working circles and blocks, and the exact meanings of these words, and in its general fitting together of the different parts of the work, only one plan for a forest working plan.

H. de Forest.

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LOGGING IN COLORADO.

To give an idea of the logging methods used in the small mills of Colorado, I will briefly describe an operation with which I was connected in the summer of 1910.

The mill, like most of the saw mills now operating in the Rockies, is a small one of about 10-12 thousand board feet per day capacity. It is located near Leadville, Colorado, on the northwest slope of the Continental Divide at an elevation of about 9,500 feet.

As a rule about twenty-five men are employed, ten in the woods, eight in the mill, two logging teamsters, two lumber teamsters, one car loader, one cook and one flunky.

The two trees of greatest importance in cutting are the Englemann spruce and lodgepole pine. The cutting crews consist of two men who fell the trees, trim them, and saw them into logs of the desired length. Usually three two-man crews are kept busy cutting logs in the woods.

After the cutting crews have passed through, two skidders, each with a horse, dray the logs a short distance and build skidways. These skidways are put in the places most convenient for getting to with the log road. While in these skidways, the logs are scaled and marked by the Forest Ranger who comes to camp about twice a week.

Two log road swampers now proceed to swamp a road to the skidways to enable the logging teams to get through. From the skidways two four-horse teams haul the logs down to the mill. The log hauling is done with a heavy sled with a four-foot bunk upon which one end of the logs is placed and securely chained. A load being secured, the logs are hauled directly to the mill landing.

The mill operates with steam power and three circular saws are run. One large saw of about 54" diameter cuts the logs into the lumber. A small saw is used for trimming off bad ends and also for cutting firewood. The third saw, a small rip saw, is used for edging up boards with defective or bark edges.

The sawdust is wheeled out by hand as are also the slabs. The slabs are dumped on a fire which burns night and day. The brush and slashings, which in many localities are piled, are here scattered when cutting is completed. The idea in doing this is to procure an even layer of slashings throughout the cut-over area and by so doing prevent serious surface erosion. This method also furnishes good protection for seedlings, and all the brush being near the ground faster decomposition is made possible than in the case of unburnt piles.

J. Russel Bruff.

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HEADQUARTERS NEWS.

GRAZING. At the close of the grazing season of 1911 the ranges, with but few exceptions, were reported to be in good condition. Nearly all the stock were in excellent shape when they left the Forest in the fall. The fall market prices were still higher than those of the preceding year, causing many owners to sell close, thus reducing the herds, which had already been depleted under the strong market of 1910. The prevailing prices for beef cattle ranged from 7 to 10 cents, averaging about 8½ cents per pound on the hoof. No sales of sheep were made on the Forest, so the price of this class of stock is unknown. Stock cattle sold for from $30 to $35.

While the rainfall in 1911 for the Forest as a whole was much below normal, the rain was fortunately distributed through the spring months in such a manner that the forage received the greatest amount of good. Although the summer season was as dry as usual, the temperature for the most part was unusually moderate and cool, which offset the dryness to some extent and kept the range in good condition.

Owing to abundant forage and to the reduced number of stock using the range, due to heavy sales of the previous fall, a large amount of grass went to seed throughout the whole Forest. This should prove of great benefit to the ranges in the future. In many places where overgrazing before the establishment of the Forest had nearly killed out the grass, there are very encouraging signs of the return of the native grasses.

A brief review of the grazing business for the Forest is contained in the following summary, which was prepared for the annual grazing report:

Approximate Total Acreage

Government Land	1,523,042
Private Land	304,258
Total	1,827,300

Approximate Acreage Grazing Land

Government	727,183
Private	159,372
Total	886,555

Grazing Capacity (Estimated)

	C & H	S & G
Government	12,020	24,000
Private	6,374	7,070

	Cattle-Horses		Total C & H	Sheep-Goats		Total S & G	Hogs
Stock authorized 1909			13430			22000	
" permitted 1909	10216	363	10579	12763*	1475	14238	None
" authorized 1910			10400			21500	400
" permitted 1910	8497	296	8793	10202*	150	10352	112
" authorized 1911			9550			18250	425
" permitted 1911	7672	260	7932	10457*	4148	14605	55

Recommended for 1912 (C & H 9550
(S & G 18250
(Hogs 425

	C & H	S & G	Hogs
Grazed under Reg. G-19 1910	1465	2250	74
" " " G-19 1911	1535	1452	31
" " " G- 2 1910	453		205
" " " G- 2 1911	739		256

Number of Permits Issued.

With fee	165
Reg. G-19	48

Class of Permits 1911

	C & H	S & G	Hogs
A	4750	2575	55
B	3182	12030	--
C	--	--	--

Number of Stock Sold for Market.

	Cattle	Horses	Sheep	Hogs	Goats
1910-3302	8	75	73	--	
1911-2437	6	--	--	--	

Losses of Stock from all Causes.

	Cattle	Horses	Sheep	Goats	Hogs
1910	108	6	1284	--	30°
1911	80	8	350	75	25

° No accurate record obtained, covering the loss of this class.

* In addition to the number stated above, permits for sheep were issued by the California and Shasta Forests for grazing partly within the Trinity Forest, as follows:

	1909	1910	1911
California	4320	11250	9180
Shasta	--	--	2385

PLANTING. Planting work on this Forest was almost entirely experimental, being confined to seeding and planting work within chaparral or semi-chaparral areas in the following districts:

No. 1 Big Bar. No. 5 Mad River.
No. 2 No. 6 Willow Creek.
No. 3 No. 7 Stuart's Fork.

A brief summary of the work is given:

	YP	JP	SP	DF	Total	Cost Ranger Labor	Cost Outside Labor	Av. Cost per Acre (Including seed)	Total Cost
Acreage	4	1	1½	1	7½				
Lbs. sown	9	4	8	1-3/4	22 3/4	$37.72	$13.00	$11.38	$71.47

Planting Seedlings.

Pincky Culch Experiment No. 1 - Plantation.

Acreage,	.93 acre - yellow pine.
Ranger labor,	$ 13.34
Outside "	nothing
Transportation,	1.50
Cost of plantation,	27.06
Cost per acre,	29.10
Trees set out,	1,000 - 6 x 6, or at the rate of 1,200 per acre.

Plans for next year have not been approved but will probably consist largely of planting transplants instead of seeding.

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RECONNAISSANCE. Office work is now being done on the estimates, reports and maps, and it is probable that all will be completed by March 1.

The following data is taken from the preliminary report submitted in November before the close of the field season:

Area covered,	158,400 acres.
Cost of field work,	$.02 per acre.
Total amount of green timber estimated,	1,070,000 M.F.B.M.
Cost of estimating,	$.00295 per M.F.B.M.

June 11 Work

We would like to call the attention of all Trinity officers to the 24 per cent error. This is not as large as it might be but it can be decreased materially if not entirely eliminated. We have all had abundant experience in this calss of work and we should have a clean record for the next quarter's report.

June 11, 1906. Settlement Reports in Lands for Quarter Ending December 31, 1911.

Column 1 - Number of cases reported on by Supervisor during the quarter.

Column 2 - Number of cases returned to Supervisor for additional information.

Column 3 - Number of cases returned to Supervisor for correction of surveys and field notes.

Column 4 - Number of cases returned to Supervisor for correction of map.

Column 5 - Percentage of total reports returned for correction.

Column 6 - Number returned for correction.

FOREST.	1.	2.	3.	4.	5.	6.
Angeles,,,.....	78	1	3	2	8%	6
California.....	2	1			50"	1
Cleveland.....	351	1		2	6"	3
Eldorado.....						
Inyo.....	3	3			100"	3
Kern.....	25	1			4"	1
Klamath.....	11	2	4		55"	6
Lassen.....	1	1			100"	1
Modoc.....	12	1			8"	1
Mono.....						
Monterey.....						
Plumas.....	7	5			71"	5
Santa Barbara.....	60	2		2	7"	4
Sequoia.....	16		3		19"	3
Shasta.....	1			1	100"	1
Sierra.....	31	2	1		10"	3
Stanislaus.....						
Tahoe.....	21	5	4		33"	7
Trinity.....	21	2	1	2	24"	5
Totals.....	340	25	16	9	15%	50

ADDITION TO OFFICE. The Forest Supervisor may now be found "guiding the Ship of State" from the private office, which was recently added to the Supervisor's headquarters. This office not only relieves the crowded state of the other rooms, but permits the privacy necessary to the proper conduct of the Supervisor's business.

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(Excerpts from AMERICAN LUMBERMAN of February 3, 1912.)

LARGEST GOVERNMENT
TIMBER TRACT EVER
OFFERED FOR SALE.

One of the largest tracts of timber that the Government has ever offered will be advertised by the Forest Service shortly on the drainage of the North Fork of the Joaquin River in the Sierra National Forest. Eight hundred million feet are in the tract, consisting for the most part of sugar pine, white fir and cedar. Its development will probably mean the construction of about seventy miles of railroad. A line can be built in on the Southern Pacific at Friant. Because of the large investment necessary the Government will offer a twenty-year contract, with two years' allowance for construction work. The minimum prices are: sugar pine $3, yellow pine $2.50, fir $1 and cedar $1. A new plan will be tried for the readjustment of stumpage prices. A certain price is to be paid for the first five years. After that time the readjustment will be made by the Forester every five years based on the current market value of lumber in that market. The award will be made about the first of August.

FOREST SERVICE
APPROPRIATION.

The appropriation for the Forest Service for the next fiscal year as recommended by the House Committee on Agriculture in the Agricultural Appropriation Bill reported to the House on Monday is $5,115,245, which is $383,370 less than estimated. The appropriation for fighting forest fires is cut from $1,000,000 to $150,000. . . . . Provision of $200,000 is made for fighting and preventing forest fires in cases of extraordinary emergency.

BIDS FOR STUMPAGE TIMBER.

Bids have just been opened at the Forest Service for the cutting of stumpage timber under Government supervision on the Sitgreaves and Apache National Forests and the Fort Apache Indian Reservation. The cutting comprises 600,000,000 feet, 300,000,000 feet on the Indian Reservation, and 300,000,000 feet on the two National Forests. The only bid received was from the Navajo Lumber & Timber Company of Holbrook, Arizona. It offered $2.50 for the first five years and $3 for the second five years a thousand feet. According to the advertisement of the Department a 10-year contract was desired. Two years' allowance was made for improvements. While the contract has not been awarded it was stated on good authority that this bid will be accepted.

KILLED TIMBER SALES.

W. B. Greeley, Silviculture branch of the Forest Service, in speaking of the killed timber which had been sold recently, gave the following figures: In the last eighteen months the Government has sold 365 million feet in western Montana and northern Idaho. The most recent sale, two weeks ago, was a tract of 25 million feet on the Two Medicine River, on the Lewis & Clarke National Forest. This consisted mostly of lodge-pole pine, Douglas fir and Engelmann spruce. Fifty-five million feet was recently sold on the St. Joe River in Idaho. This was mostly white pine.

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NEWS FROM THE DISTRICTS.

District No. 1.

All the spare time of the Guards Adams and Brannan in the month of October was spent in turning brush on the Humboldt Gas & Electric Company timber sale areas, Free Use areas, Trinity River telephone right of way, and the J. W. Trimble and Gerald O'Shey timber sales.

During the month of November, with one temporary laborer to assist me, we repaired 32 miles of telephone line, tieing up all the low places, and removing all the brush found touching the line. The brush was cut from 3 miles of the Trinity River trail, and brush and logs removed from 5 miles of the Corral Creek trail.

For the month of December I began the construction of a building to be used for a tool house and blacksmith shop, and a sled road for use in hauling timber to repair the Big Bar Ranger Station fence.

FOREST PLANTING: I have noticed that the planting area on Corral Creek is infested with a worm that resembles the wire, or cut worm. Can anyone suggest a remedy for this evil?

IMPROVEMENT: The month of January was devoted almost entirely to the repairing of trails, and telephone lines which were damaged by the sleet and snow. The rest of the month was devoted to mapping and making plans for the protection of the Forest from fires.

H. W. Brannan,
Asst. Forest Ranger.

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District No. 2.

Assistant Ranger Woodhams and I finished burning the brush on the Altapom trails and planted one-half acre of yellow pine seed in the shade of oaks, as an experiment, during October and the first half of November. I made a complete report on all the grazing ranges, and turned out five June 11 reports.

NOTES ON THE ILLUSTRATIONS.

Now that the fire season is over I look upon the summer's work with great satisfaction. During the time when the fire conditions would permit, we brushed out forty miles of trail to the width of eight feet, which we may claim gives us this important improvement almost without cost. We completed twenty miles of telephone line and installed four instruments at a total cost of $448.50. The freight cost over three cents per pound on all the material. We completed a house and barn on the Indian Valley Ranger Station with an outlay of $105. These two buildings are frame and the house floored with sawed flooring which cost us $30. We fenced two 5-acre pastures at a cost of $100, paying three cents per pound for the freight. I have under way a store house 12 x 24 feet at my headquarters and have wire for four pastures of five acres each on the ground ready for completing in the spring.

We got through the fire season this year with only five fires. I attribute this success greatly to the thoroughness of the posting of over 200 fire warnings in conspicuous places, and the practice of seeing every camper as quickly as possible after they reached the Forest, and by the systematic patrol and the absence of electrical showers during this season. The five fires cost us only $5.65 for supplies, and we have them down to 17.1 acres at a total cost for everything of $54.50. We have approximately 12 billion feet of standing timber in this district. District 2 claims the banner fire record for the Trinity this season.

During January I prepared the fire and improvement plan and the estimates for the various projects.

The Hayfork telephone line was repaired and a small bridge constructed over Middle Creek. The remainder of the time was spent in making some administrative site reports and general office work.

Wm. X. Garrett,
Asst. Forest Ranger.

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District No. 3.

The greater part of January was spent in office work of various kinds, mainly the preparation of reports and maps.

A field examination was made with Deputy Supervisor Coffman of the insect infested timber near Hayfork.

The storms of this month made it necessary several times to repair damage done to the Telephone lines.

J. T. Patton,
Forest Ranger.

District No. 4.

Owing to our being short handed, not much improvement work was done. During October some trail work was done and the blacksmith shop at White Rock Station was completed, some of this work being done by ranger and guard labor. About six miles of insulated copper wire from White Rock to North Yolo Bola lookout was taken up and stored at White Rock.

During the month of November this district was still in considerable danger from fire, owing of course to the abnormally dry season for this time of the year. This danger was checked on or about the eighth, when some rain fell. However, the open weather that ensued, together with the few hours of warm sun per day soon dried out all exposed situations with the result that there was more or less fire danger during the latter part of the month. Seven days in this month were devoted to fire patrol and three days were spent with the reconnaissance party near Peanut. I enjoyed this work very much (don't laugh, Patton) and would like to have spent much more time with them.

There is not much of interest to relate in regard to the happenings in this district at this period of the year, so I will have to make it up with something else.

The district differs from all others, I believe, in this forest. The headquarters of our other Rangers are situated approximately in the center of their districts, which is of course, as it should be. The lowest altitude in District 4 is in the neighborhood of 3500 feet and there are positively not sites at all suitable for the establishment of permanent Ranger headquarters. Even if such sites were available, I doubt if it would be wise to take advantage of them since the district is so extremely unsettled. I think that three men form the population all the year around. It is unnecessary to say that snows are usually very heavy and it is nearly always present until late in the spring. It is easily to be seen then, that this state of affairs is a great drawback. As you all know, it is a great convenience to live in amongst your permittees and other Forest users. Here in this district there are no Forest users of any description (with the exception of the three before mentioned, and one of them only is a permittee) that live in the district all the year around,

Number 20.

and only one other that maintains a summer headquarters within it.

Instead of living in the district, the permittees using it in the summer grazing season reside in and around the Bald Hills, Cas Point, Cottonwood, Hunters and Red Bluff - miles outside the Forest. A trip of anywhere between 30 and 60 miles is entailed in case a visit becomes necessary to any one of them. Take the case of a chronic backslider every spring in the payment (or nonpayment) of his grazing fees; in most districts it is usually possible to pay a man a visit with usually favorable results. Here, in such a case, it is write, write and rewrite and then the case may be straightened out. In all other respects it is the same way. In case of fires we are severely handicapped in having very little help available, so we are forced to rely on a system of unceasing vigilance for their prevention. In most districts it is usually possible to accomplish improvement work of some kind. Here of course, it cannot well be done. The most of my time in January was put on various kinds of office work, connected with grazing work on tract book, improvement estimates, base map and fire plans for the coming season, and I may say that much milling over was done on these last. A few days were spent on miscellaneous executive duties in the field and several were put in repairing the Wildwood-Harrison Gulch line in Ranger Patton's district.

Harry Everest,
Asst. Forest Ranger.

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District No. 5.

During the October and November period considerable time was spent in district administrative work. The matter of making the revised grazing report covering some 5,200 acres of alienated land in this district was found to be no small task and took more time than was at first expected. In District 5 the grazing season closed with the ranges in excellent condition and it is hoped that as good results will be obtained along these same lines next season. There are only a few small bands of cattle remaining in the district for the winter, this stock belongs to settlers living in the district, the other stock having been removed to their respective winter ranges outside the Forest.

During the month of October and up until November 15 (when all appointments for short term men terminated) the officers in the district were busily engaged in improvement work with an occasional fire patrol, and

ther succeeded in completing some much needed improvements in the district. Before storms intervened Assistant Ranger S. A. Shields completed the cutting and splitting of sufficient shakes, lumber, poles and other timber necessary to complete a barn at Bear Lake Ranger Station. Mr. Shields also framed the timbers for his barn and it is now ready to raise with the return of another field season. Assistant Ranger Hays, with temporary labor, completed a very nice blacksmith shop and tool house at the Mad River Station, and at this station they also made the foundation for a dwelling which, when completed, will provide a very nice headquarters for this district. As there will be but one ranger in this district during the winter months, it is hardly expected that any extensive improvement work will be completed in the near future. It is hoped, however, that considerable work will be done toward completing the house on the Mad River Ranger Station.

It was thought that with the September issue of the Trinity Forester there would appear the last account of Forest fires for the season, but with different results for this district. During the months of October and November we recorded five different fires in the district, but none of any consequence. Our record for the season was eleven,-ten within the Forest, and one extinguished along the boundary, just outside.

During the month of January heavy snowfalls in this region made it impossible to do extensive field work. However, I was able to complete all the work on June 11 cases,- 2 cases being taken up and disposed of during the month.

Three days were also spent on boundary survey, and two days on Improvements,- the repair of pasture fences and trails. Some office work was taken up - all the most important - revising and copying for the Ranger's and Supervisor's files, reports on Form 251 showing the grazing capacity of 58,855 acres of alienated land in this district. This work was covered thoroughly, using all the data available and I feel prepared to say the reports now stand in first class shape for the next year.

Fire plans for the district were also completed, together with estimates for the various improvements connected therewith. A few days were spent on individual grazing cases, claims, free use, etc.

55. John T. Gray,
Forest Ranger.

District No. 6.

The trail from the foot of Red Hill to Pratt Corral on Trinity Summit, a distance of approximately 3 miles, was completed by Loehe, Frazier and Larsen before the close of the field season.

Two Ranger Stations on Trinity Summit were surveyed by metes and bounds. One is on Red Cap Prairie and will be known as the Red Cap Ranger Station. The other is on the south end of Trinity Summit and will be known as the Trinity Summit Ranger Station. The Trinity Summit Ranger Station is one of the highest points on Trinity Summit and is a good fire lookout. It is my intention to fence this station before the beginning of the next field season, using the wire purchased for the Box Camp Ranger Station.

All of the telephone lines in this district were repaired for the winter. In doing this work, where possible, I took out the solid ties and put in sliding insulators instead.

I have 21 miles of telephone lines in this district without a bracket or bridle. This is in 2 separate lines - the New River line of 12 miles, and the Hoopa line of 9 miles. The idea that the slack in wire will run down hill does not seem true, as on the Hoopa line a few weeks ago a tree on which the wire was fastened fell along the road causing the wire to be in the way of a freight team. The teamster had driven into the wire before he saw it and had the wire cut in order to get his team out. Although the mountain is very steep, the ends of the wire did not pull more than 30 feet apart. From this incident and other experiences that I have had with telephone lines, I do not believe that it is necessary to have a bracket or bridle on any telephone line.

During the month of January I made settlement of Jesse Scott's cattle on Trinity Summit. This was the only case in this district where there was any difficulty in getting an application and making a settlement for grazing during the past grazing season. Made an examination of Watson Peak back of Four Mile Camp for a lookout station. Made survey and examination of Henry Ruckert's Case. This clears up all settlement work in this district to date.

Frank A. Graham,
Forest Ranger.

All the Guards' tools on Buckeye and Trinity Mountains were gathered in to District Ranger's headquarters by the first of October, and the temporary telephone line to Keono was picked up by Assistant Ranger Box and Forest Guard Viles. Forest Guard Viles was kept on patrol duty until October 14 on account of the dry weather.

The first of November a nice little sale amounting to $175 was made to the Trinity Dredging Company. Mr. Jotter and I also cruised, in a rough way, a prospective sale area for a one million foot sale; which we hope to pull off next spring. We found plenty of timber on Government land and an excellent mill site on Buckeye Creek for a saw mill plant.

Lumber was bought at Trinity Center for a barn on Trinity Mountain Ranger Station, and hauled to the site after about two months delay. It being too late in the season to build, I made a trip over and piled the lumber in good shape for winter.

Our annual grazing report, accompanied by a report on the grazing capacity of private lands, and tracings showing the private lands, was no small job this year. Assistant Ranger Box and I put in ten days of what we call hard work on this job. The district being within the railroad land grant and within the Minersville mining district, we certainly had something to do. Our report did not reach the Supervisor's office on the date set by Mr. Huestis; the job being so much larger than we expected it would be, we did not begin work on it soon enough.

Our fire and improvement plans went in on time, or at least if not on time, Deputy Supervisor Coffman informed us that it got in first.

The New Year came in with a severe snow storm. Snow fell to the depth of more than two feet, which made field work impossible without snowshoes. Accordingly, Assistant Ranger Box and myself set to work to clean up some of our office work which had been piling up since the last fire season opened.

We wrote up our field notes on our boundary survey, sending the original to the Supervisor's office and keeping the copy for our own files. Got out an improvement map, grazing map, and corrected a sample Forest atlas sheet for the District Office.

We rearranged our office files, and on the 23rd we started our field work again, but a hard rain made it necessary to again abandon work until the 27th. On that date we began our survey of the Humboldt Mining Company's placer claims in earnest, and have to report excellent success in finding old lines and Government corners. We have put in eight days surveying, averaged one mile per day, reblazed old line trees found, and rebuilt all Government corners found that were in poor condition. Where the original stake was found fallen down and its proper location was marked by a mound of stones, we replaced the stake, piled up a few more stones, and passed on to the next. Where the stake had rotted and fallen and there was no mound of stones to mark its former location, we set a pin according to the field notes the proper direction and distance from the bearing trees, and by carefully scraping away the ground, looked for that part of the stake left in the ground when it fell. We set two new stakes in this manner. Where no stake or mound of stones remained, we set new stakes, according to the field notes and bearing trees. We have made new bearing trees wherever we found one fallen down, but have marked both our stakes and bearing trees "F. S." so that anyone finding them will know that some member of the Forest Service did the work. We have found sixteen Government corners, or some evidence of them. In some cases only one bearing tree remained. We have re-established nine corners by putting in new stakes, making new mounds of stone and marking up new bearing trees. The lines run have been as carefully chained as two men could do the work without cutting brush. On steep ground the chain is broken to half-chain, and a good set of field notes is being written, including notes on timber, reproduction, and forage. All corners to claims not conforming to section or quarter section corners are marked by stakes and mounds of stone for future reference. We have failed to locate [illegible] three quarter section corners - one of them had evidently been mined away - one, we believe, had never been set, since there were no blazes to be found on the line after it passed into bad country, and the field notes did not fit the country we passed over - the third we did not look for very much because we did not need it in our work. We have 30 to 35 miles to survey and chain yet.

C. A. Chamberlain,
Forest Ranger.

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PERSONAL MENTION.

Mr. and Mrs. Patton are to be congratulated on the arrival of a girl the middle of January.

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Forest Supervisor Huestis was on detail in the District Office during the last six weeks of 1911, and attended the Supervisors' Meeting during January.

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Mr. Evans and Mr. de Forest took annual leave in San Francisco, Mr. Evans remaining in the District Office to do his reconnaissance mapping until the Supervisors' Meeting which he attended.

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Mr. Coffman, Mr. de Forest and Mr. Hafley attended the Supervisors' Meeting.

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Forest Clerk Laura E. Williamson reported for work November 15 after an extended visit in Southern California.

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Ranger Gray was in the office during November to assist in the preparation of the grazing report.

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Although rather tardy, the Trinity Forester wants to extend its congratulations to Mr. and Mrs. Goodyear, whose wedding took place December 20. Mrs. Goodyear nee Shoup during the year and a half of service on the Trinity proved herself to be accurate and conscientious in all she did. She says, however, that she likes housework better than office work.

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Miss Regina Emmerich has been appointed Clerk to fill the vacancy caused by Mrs. Goodyear's resignation. Miss Emmerich took the Civil Service examination last year, and has been Clerk on the Medicine Bow National Forest, Laramie, Wyoming.

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Ranger Patton was in the office on official business during February.

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Mr. J. T. Miller, Entomologist, is now on the Trinity making a study of the insect infested timber near Hayfork.

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THE FOREST CLERK.

Who could relate the kinds of work
That fall to the lot of the Forest Clerk?
Record the things that she must do
Before she counts her day's work through?

She opens the letters and reads the mail
From a grazer's complaint to a timber sale:
She takes dictation as a matter of course
from the janitor up to the head of the force:
She bears the brunt of the office ire
and wears a smile as she pokes the fire:
She listens in sympathy when things go wrong
Till frowns disappear and hearts grow strong:
And not the least of her many trials
Is keeping in mind all things in the files,
which files she arranges day after day
For those who take out but don't put away.
Accounts and disbursements must be kept well in hand
As for errors in that line no D. F. will stand,
And so the poor Clerk must worry her brains
And get little thanks for her efforts and pains:
She makes out reports and orders supplies
For the force in the office and Ranger likewise:
She straightens out claims and helps on the maps,
Reconnaissance, grazing, or boundaries, perhaps.
She answers the telephone forty times daily,
Welcomes all visitors and talks to them gaily,
E'en though on her desk the work stands knee deep
And all must be finished before she can sleep.
The first of the year she turns her attention
to Accountability - too awful to mention!
Then follow the things which before I have quoted
Though dozens of things I have'nt yet noted,
Such as corrals and fences and bridges and trails,
Telephone lines and great timber sales:
Fire prevention for tree preservation
To help Uncle Sam promote Conservation.

She tends all these duties in a businesslike way
So when all's said and done no critic can say
She does'nt deserve, from the hands of the Nation,
The small sum she gets as due compensation.

Rita A. Castle,
formerly Clerk.

Walter Mulford

THE TRINITY FORESTER

Vol. II - Weaverville, California, July 1, 1912 - No.3

PERSONNEL

Supervisor's Office.

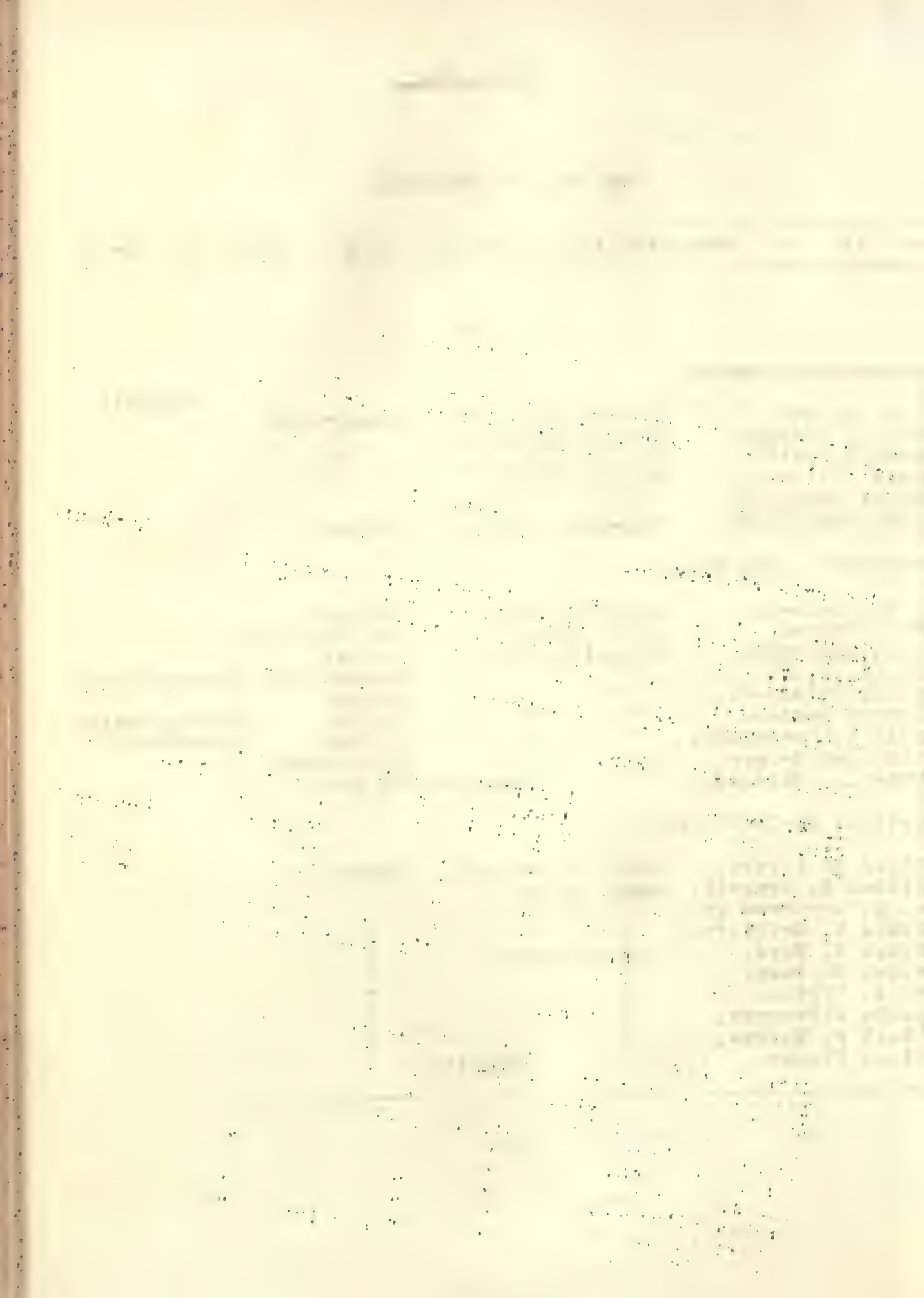
			Lookouts
W. A. Huestis,	Forest Supervisor	Weaverville	
John D. Coffman,	Deputy Supervisor	"	
Ernst V. Jotter,	Forest Assistant	"	
Laura Williamson,	Forest Clerk	"	
Regina Emmerich,	" "		
Olive Vanderhoff,	Telephone Operator	Hayfork	

District 1.-Big Bar.

H. W. Brannan,	District Ranger	Big Bar	
Edw. Elmgren,	Asst. Ranger	Junction City	
R. C. Dahlstrom,	Forest Guard	Big Bar	
Geo. B. Reid,	" "	Weaverville	Weaver Bally
Wm. B. Hitchcock,	" "	Helena	
Clement Carter,	" "	Hayfork	Hayfork Bally
Oxcil I. Westerberg,	" "	Big Bar	Ironsides
John Adam Berger,	" "	Burnt Ranch	
Ernest A. Waldorf,	" "(Aug.1st)	Big Bar	

District 2.-Southfork.

Howard de Forest,	District Ranger	Hyampom
William X. Garrett,	Asst. Ranger	"
Wm. H. Woodhams Jr.,	" "	"
Howard H. Griffitts,	" "	"
Edward L. Ward,	Forest Guard	"
Samuel Jackson,	" "	"
Wm. A. Pigton,	" "	"
Joshua Hitchcock,	" "	"
Robert F. Elkins,	" "	"
Antone Franks,	" "(Aug.1st)	"



District 3.-Hayfork.

			Lookouts
James W. Patton,	District Ranger	Peanut	
J. M. Dougherty,	Asst. Ranger	Hayfork	
Ivan A. Cuff,	" "	Peanut	
Ernest E. Duncan,	Forest Guard	Hayfork	
Edw. E. Smith,	" "	Peanut	Dutakella
Wm. C. Duncan,	"	Hayfork	
Edw. W. Leventon,	" "	Hayfork	
Benj. H. Randolph,	" "	Ruth	
Charles Rourke,	" "	Hayfork	
Charles H. Crews,	" "	Knob	

District 4.-Yola Bola.

Harry Everest,	District Ranger	Knob	
Alva Tracy,	Asst. Ranger	Hunters	
Frank D. Bucklew,	" "	Knob	
John R. Watson,	Forest Guard	Knob	
Wm. R. McArthur,	" "	Beegum	
James A. Nevins,	" "	Knob	Yola Bola
Jasper Ward,	" "(Aug.1st)	Knob	

District 5.-Mad River.

John T. Gray,	District Ranger	Ruth	
Samuel A. Shields,	Asst. Ranger	Zenia	
Oscar O. Hays,	" "	Ruth	
H. J. Kohnenberger,	Forest Guard	Kunts	
Benj. B. Iliff,	" "	Ruth	Pickett Peak
Albert F. Gray,	" "	Ruth	
Wade H. Atkeson,	" "	Ruth	

District 6.-Willow Creek.

Frank A. Graham,	District Ranger	Chinaflat	
David W. Haas,	Asst. Ranger	Chinaflat	
Wm. I McNeil,	Forest Guard	Denny	
Chas W. Beebe.	" "	Chinaflat	
Jos. H. Martin,	" "	Burnt Ranch	
Albert R. Fonts,	" "	Quinby	
Harold Warren,	" "	Korbel	
Alfred W. Bussell,	" "(Aug.1st)	Chinaflat	

District 7.-Stuarts Fork.

C. A. Chamberlain,	District Ranger	Minersville	
Reuben P. Box,	Asst. Ranger	"	
Bruce P. Viles,	" "	"	
John A. Molin,	" "	"	
John H. Cummings,	Forest Guard	"	Granite Peak

EDITORIALS AND COMMENTS

"To Have and To Hold"

A certain shovel painted green, and embellished in gilt with the words "Fire Protection Prize 1st Class" has become so much a part of the furniture of this office that it would be very much missed indeed if its place ever became vacant. You were all proud to know that the Trinity won it, and to see it here when you attended the Ranger Meeting, and we all want to keep it throughout the entire summer of the present year and see it here again on the occasion of the Ranger Meeting next year.

To hold our prize means that every last man Jack of us must be on his mettle through the entire summer, always on the alert and always doing his best work. We are going to have greater competition than we had last year, and the Sierra Forest has sent the following challenge: "We are going to beat your fire record this year, if God will let us." We hope they will beat our fire record for last season, but we do not intend to allow the Sierra or any other Forest to beat our 1912 record.

Our Protection Plan.

The other Forests have been working up efficient fire plans, and the Trinity has not lagged behind, but has been perfecting its own plan as well. We will have several more patrolmen than last season: Fire protection has been made the keynote of our plans for the fiscal year beginning July 1, and every other interest has been subordinated so far as possible in the matter of expenditures to give every possible cent to protection. We will have one more permanent lookout station connected by phone, and a lookout map and instructions have been prepared which should make our lookout system more effective than in the past. The fire protection scheme has been carefully laid out, and while it is not all we hope for in future years, it is the most effective we could devise with our present appropriations and improvements, and is better than we ever had before. Will it work? Will it come up to expectations? The answer lies with every one of us individually, and collectively. If every single part of the machinery does his duty faithfully and enthusiastically, and we all pull together, our plan will work, but a breakdown in a single part may mean the demoralization of the whole scheme. I am sure every man will do his duty. Let us prove by our good record this year that our success last year was not the result of accident or good fortune, but was brought about by a good plan efficiently carried out, and repeated with still greater success in 1912.

The 1912 Protection Competition.

The District Forester has written the Supervisors of District 5 as follows:

"A Class-A fire is one that is discovered, reported and put out before it burns over more than a few square rods. In 1910 23% of the fires occurring in District 5 were Class-A; in 1911, 37%. That means that there was an increase of 14% in the effectiveness of our protective work. All our fires would be but Class-A if our protective system were 100% efficient. Can we make six Class-A's out of every ten fires reported this summer? Evidences of preparation so far lead me to believe that there is going to be the hardest kind of a try.

"The shovel is now on the Trinity, the hoe on the Modoc, and the axe on the Inyo. Are they going to stay there?

"This year the protection prizes will be awarded for the months of June, July, August and September. The Forests have again been divided into three classes in order that all may compete on an equal footing. They are as follows:

First Class	Second Class	Third Class
Angeles	California	Inyo
Cleveland	Eldorado	Mono
Klamath	Kern	Monterey"
Lassen	Modoc	
Plumas	Sequoia	
Santa Barbara		
Shasta		
Sierra		
Stanislaus		
Tahoe		
Trinity		

Classification of Fires.

"For the purpose of this contest the Following classification of fires, which it is believed will aid materially in making the awards, has been adopted and should be used in all your reports to this office:

Class-A: area burned over not more than one acre.
Class-B: area burned over not more than ten acres.
Class-C: fires burning over more than ten acres.

"Report fires originating on National Forest land and on private lands inside the Forest boundaries and also fires originating outside but burning across the boundary into the Forest. In other words, for the purpose of this contest any area burned over within the outside boundaries of the National Forests will be counted against that Forest."

Basis of Awards. The following three factors will be taken into consideration in awarding the protection prizes:

1. Smallest average acreage per fire.
2. Highest percentage of Class-A fires.
3. In case of a tie, the relative fire danger of the Forest as shown on Sheet-A."

What Ranger District Wants It? As an added inducement to create among the ranger districts of this Forest the same good natured rivalry that exists among the Forests in the matter of competition for the Fire Prize, the members of the Supervisor's office will present to that ranger district making the best record for the fire season, as a permanent ornament for that district's headquarters, an enlarged photograph of a forest scene or some suitable picture which will be equally fitting, well framed, and neatly marked to the effect that it was won by that district as a fire protection prize for the best fire record on the Trinity in the year 1912. The value of this framed picture will be at least five dollars. The basis of award will be the record for the entire fire season from June 1 to its close, and the award will be made in the same manner as is followed by the District Forester in awarding the shovel to the winning Forest, as shown above.

The Visit of Assistant District Forester Barrett. Mr. Barrett's visit was enjoyed by all of those who had the good fortune to be associated with him during his trip; he has particularly good powers of observation, and helped all by his suggestive hints. Perhaps a brief resume of such general matters that impressed him may be of interest:

Evidently he believes that "faith without works availeth a man nothing" when it comes to real judgement of merit, since the Rangers who showed the most and best work accomplished were deemed most efficient.

In several Districts he was particularly impressed by the well laid out trails, the great quantity of brush cut, and the thorough manner with which the District was plastered with signs. Mr. Barrett believes in the liberal use of fire warnings and emphasized the desirability of posting direction notices on all trails.

At the stations he observed particularly the condition of the various tools, such as shovels, axes, etc. As he said, all tools should be put into proper condition during the winter before the time arrives to be spent in field work. He gave special credit to those men who had everything in readiness.

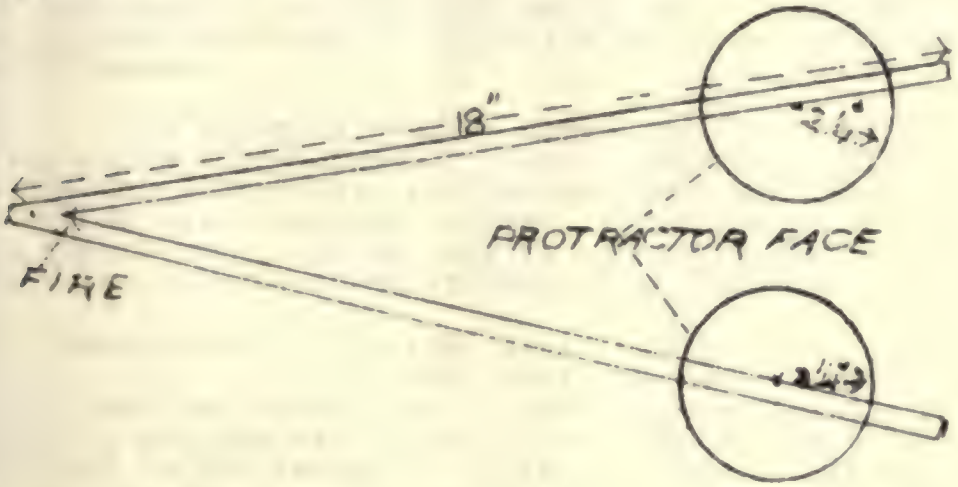
He observed also the general appearance of Ranger office quarters, and made comments much to the discredit of one or two men.

The District Ranger is more or less consciously patterned after by his assistants, and cannot justly expect better results than those set by his own standard. Realizing this fully, it seems up to each Ranger to set the pace for his District so that when the next District officer comes he will find all Districts up to the same high standard of excellence in all matters.

The Lookout System. The experience of last year justifies the lookout system and measures have been taken to strengthen this feature of the protective plan so that practically the entire Forest is now under the observation of two or more men. Each of these has for his equipment: a field glass, compass, pointed rule and a map of the Forest on a scale of one-half inch to the mile. On this map there has been drawn around each lookout a protractor face divided into quadrants, just exactly like a compass.

In operation the lookout takes a reading on a fire with the compass and asks for a reading by some other lookout who sees the fire. He then locates the fire by using a strip of metal hinged at the center by a rivet so that the two ends move freely. By placing the inner edge of one of the free ends of the ruler on one lookout at the proper point on the protractor circle and the inner edge of the other end of the ruler to show the proper reading from

the second lookout the fire is located at the intersection of the two arms of the ruler. Of course these two arms have to be slipped back and forth to secure the proper readings. This system is much more simple than the protractor, can be used more quickly, and requires no strings or marks to locate the intersecting point.



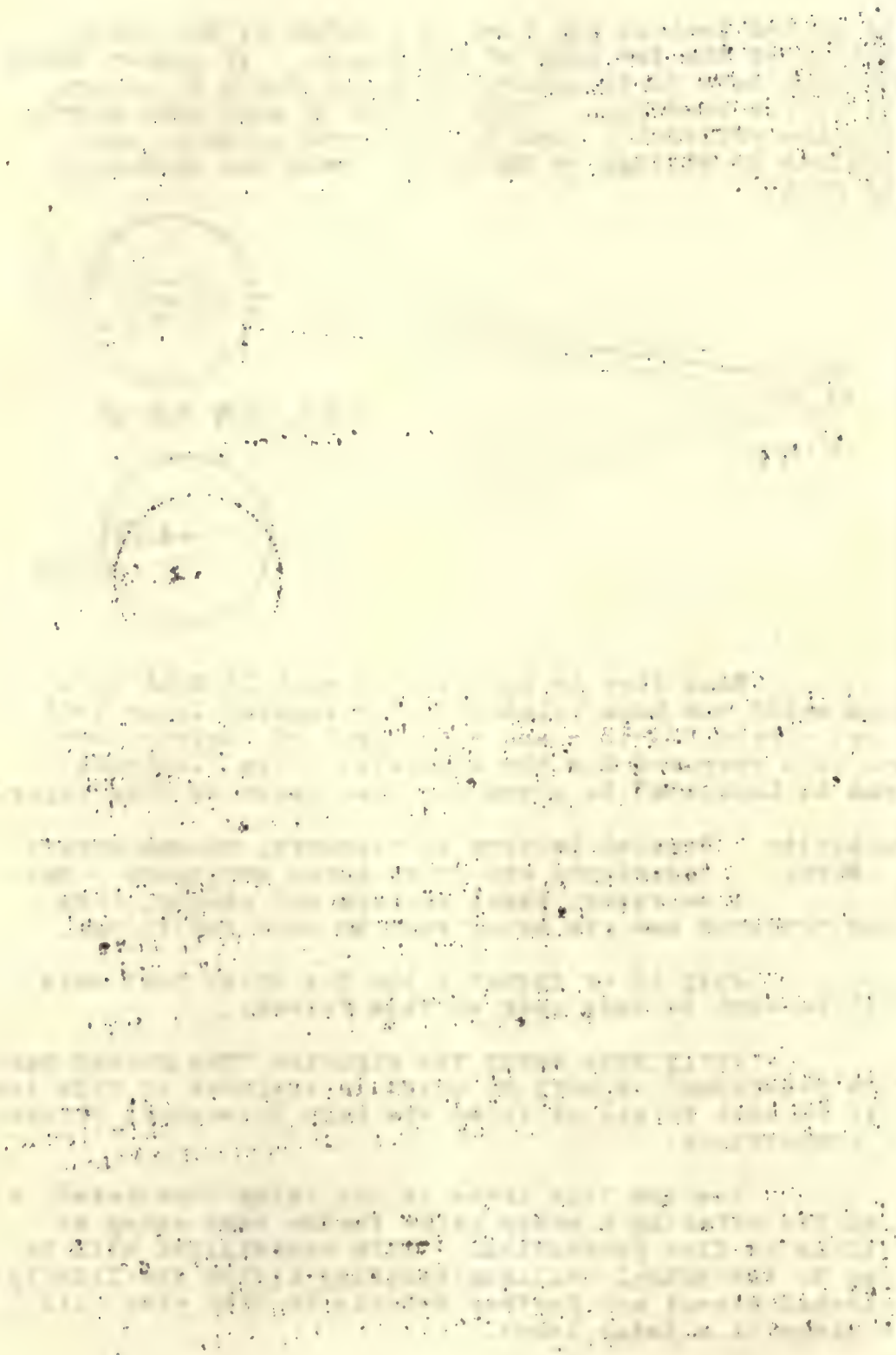
Each fire is reported by each lookout on a form which has been printed on the regular loose-leaf sheet - Form 674-13 - and a full set of instructions has been prepared for the lookouts. The "Instructions to Lookouts" is given on other pages of this paper.

Publicity Work. Special letters to teachers, mining superintendents and other large employers - mail carriers, hotel keepers and others, have been prepared and are being sent to each individual.

July 15 or August 1 the Six Rules post card will be sent to each user on this Forest.

Early this month the circular "The Forest Service Telephone", a copy of which is included in this issue, will be sent to all of those who have Government phones or connections.

Besides this there is now being considered, a plan for offering a money prize for the best essay or article on fire protection. This competition will be open to the school children residing within the Trinity National Forest and further details of this plan will be given in a later issue.



In addition to these special efforts each Forest officer is at all times doing his utmost to educate the people of his District to a proper understanding of the effects of fire in the woods. Not in an argumentative way, but quietly, a word here and there - it is surprising how much good can be accomplished in an unobtrusive, tactful manner.

We may make ever so elaborate a fire plan, employ numbers of patrolmen, locate each fire quickly, but not until favorable public sentiment is aroused can we hope to have complete success in Protecting our forests from fire. And so long as we cannot have safety from fire we are not really practicing forestry.

Fire Cooperation. We feel that special mention should be made that the Bayside Lumber Company and the Sugar Pine Investment Company have each agreed to pay the salary of a three months man to be stationed in the center of their respective holdings. The Bayside man, Mr. Elkins, will be stationed at Cold Springs on South Fork Mountain, and the Sugar Pine Investment Company man, Mr. Charles Crews, will be patrolling in the vicinity of Wildwood.

This shows quite conclusively that timber owners believe the Forest Service system of protection pays and that lumber men in California are beginning to realize that all fires, whether "light burning" or otherwise, cause serious damage to the timber. Having secured the cooperation of these companies, we hope the other large timber holders will also decide to give their property the protection it requires.

Northwestern Pacific Timber Sale. Recently 520 acres were added to the Trinity National Forest in the land temporarily withdrawn near Carlotta in Ranger Gray's District.

The area was about to be thrown open to the people, and since there were persons all ready to file on it with the evident intention of holding up the railroad for the timber, the area was included within the National Forest.

Permission has been secured from the Secretary for the advance cutting of approximately 2,000,000 feet of timber, the final prices of which will be fixed in accordance with the highest bids submitted in response to an advertisement of the timber.

Fires Here and Elsewhere.

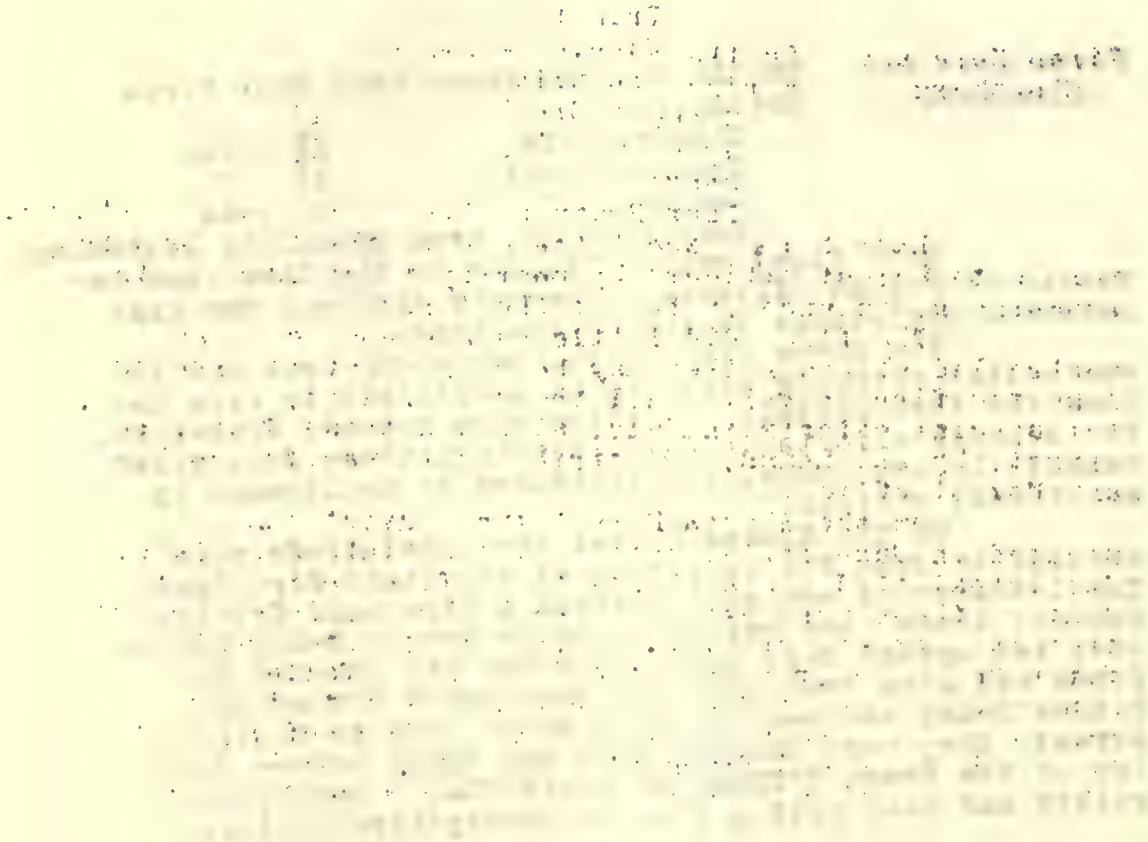
On the Trinity there were four fires during June.

Chanchelulla	1¼ acres
Hyampom Creek	1½ "
Canyon "	2 rods
Near Hyampom, tree struck by lightning.	

Each fire, except the one in the tree, was reported to Forest officers by near-by ranchers who also rendered assistance in two of the fires.

The fires did little damage and were easily controlled although they may be sufficient to make us lose the fire shovel. All the more reason, therefore, for special efforts in July, although these June fires cannot, by any means, be attributed to negligence by any Forest officer.

On the Shasta Forest two convictions were secured in June for violation of the State Fire Laws. Two intoxicated men each started a fire near Trinity Center; these were extinguished by Ranger Doney before they had spread very far. The men who started the fires had gone over into the Sacramento Valley but Ranger Doney secured evidence which lead to their arrest; they were brought back and taken before Justice of the Peace Coffman at Carrville. Both plead guilty and each paid a fine of twenty-five dollars.



RATIONS

The following table, in its first two columns, gives the results of long, practical experience by capable persons in deciding upon a sensible, satisfactory ration for men doing hard work. The first column gives the U.S. Geological Survey ration which is generally recognized as standard. The second column gives a change from this, being a list prepared more especially for fire fighting crews in Idaho, and is the result of great experience in and out of the National Forest Service. The third and fourth columns give lists from two Forests in Montana. The fifth column gives the present Trinity list, and the sixth column, the proposed Trinity list. Suggestions for changes in the last are desired.

These lists are arranged in the standard manner for ration lists. The basis is 100 rations. That is, each figure given represents one hundred rations, and each ration means one days supply for one man. For instance, take the first item in the proposed Trinity list: 80 lbs. of cured or canned meats equals 100 rations for one day. To get to 1 ration divide by 100. Thus 1 ration = $\frac{80}{100}$ = 0.8 lb. of cured or canned meats per man per day. To take a very simple case, suppose anyone wants to know how much flour to take along to supply four men for ten days. Using the proposed Trinity list we find 85 lbs. in the list as the ration for 100 men for 1 day. For 1 man it would be 85 divided by 100 or 0.85 lb. For 4 men it would be four times this or 3.4 lbs. for 1 day. And for 10 days it would be ten times this last amount, or 34 lbs. for 4 men for ten days. Of course in actual practice this would be figured out quickly, like this:

.85
40
34.00

General Ration Lists.

100 rations. 1 ration = supply for 1 man 1 day.

		U.S.	Idaho, U.S. Selway	Montana Black-feet	Montana Lolo	California Trinity Present	California Trinity Proposed
Cured, canned meat & cheese	(lbs.)	50	80	150	50	54	80
Fresh meat	(")	100	--	---	40	--	
Eggs	(doz.)	---	--	---	12	8.5	12

		U.S. G.S.	Idaho Selway	Montana Black-feet	Lolo	California Trinity Present	Trinity Proposed
Lard	(lbs.)	15	10	10	10	7	10
Bread or flour	(lbs.)	80	106	100	75	50	85
Bak. powder or yeast	(")	5	3	3	3	5	5
Salt	(")	4	8	6	5	7	6
Sugar	(")	40	25	41	40	33.5	40
Molasses or syrup	(gal.)	1	--	1½	1	1	1
Coffee	(lbs.)	10	10	8	8	7.5	10
Tea, chocolate, or cocoa	(lbs.)	2	3	1½	2	2.5	3
Milk	(cans)	10	48	12	18	33.5	42
Butter	(lbs.)	10	15	17	10	13.5	15
Dried fruit	(lbs.)	20	28	20	10	13.5	26
Rice, beans, macaroni, etc.	(lbs.)	20	35	25	16	23.5	30
Potatoes and other fresh vegetables	(lbs.)	100	200	115	100	67.	150
Rolled oats and cereals	(lbs.)	15	10	10	8	15.5	15
Canned vegetables or fruit	(cans)	30	42	100	30	23.5	40
Spices	(oz.)	4	8	12	1	6	1
Flavoring Extracts	(oz.)	4	16	12	4		4
Vinegar	(qts.)	1	1	--	-	-	1
Pepper or mustard	(oz.)	8	4	--	4	6	4
Catsup	(pt.bottle)		3	--	1	2	2
Onions	(lbs.)		25	16	8	7	15
Pickles	(qts.)	3	3	1	1	2	2
Raisins(seeded)	(lbs.)					7	5
Sago	(lbs.)					1	
Sweet chocolate	(lbs.)					7	8
Jelly and preserves	(qts.)						6
Hard tack	(lbs.)					8.5	3
Crackers	(lbs.)					2	
Soap	(bars)		5	10	6		5
"	(cakes)					7	

	U.S. G.S.	Idaho, Selway	Montana Black-feet	Lolo	California Trinity Present	Trinity Proposed
Matches (bxs.)		3	12	6	7	7
Candles (lbs.)		1		1		2
Totals lbs.	474	560 3/4	524 3/4	386 5/8	328 3/4	509 5/8
Gals.	2	1	1 3/4	1 1/2	1 1/4	3 1/2
Cans	40	90	112	48	57	82
Doz.(Eggs)				12	8 1/2	12
Bottles(Pts.)		3		1	2	2
Boxes(Matches)		3	12	6	7	7
Bars(Soap)		5	10	6		5
Cakes(")					7	
Total weight of food per day per man:lbs.	5.4	6.8	6.9	4.8	4.2	6.5

A ration list like any of those above is a balanced affair, that is; the different kinds of food mentioned are supposed to be nearly all included in the bill of fare over any considerable period and thus give a man plenty and a good variety of nourishing food, the right kind of fuel for him when he is doing hard work. Although a balanced ration list is thus supposed to be used complete this is really true only in the sense that most of the articles mentioned in the list should be included in the bill of fare when the occasion,-either a considerable number of men to be fed or a few men to be fed for a considerable length of time - makes the use of these ration lists desirable.

In the case of the Trinity timber reconnaissance crew of seven men with six consecutive months of field work, the proposed Trinity list complete furnishes a varied diet of wholesome food fit to meet every reasonable requirement of men doing hard work. A ration list, however, is never one that must be ordered absolutely complete from beginning to end every time it is used. Take the proposed Trinity list for example. The later items of raisins, chocolate, jelly and preserves, need not be considered in ordering for a fire fighting crew. These items are in the general list to help balance it for the reconnaissance crews who must necessarily have compact food of light weight for the lunches the individual men carry out from camp. A very useful purpose of any good ration list is both to furnish a memorandum of things to get and a simple plan for determining what quantities to get in different cases. In figuring quantities one would, of course, take the nearest amount that is convenient to order. Thus if a calculation figured out 48 lbs. of flour one would order a 50 lb. sack.

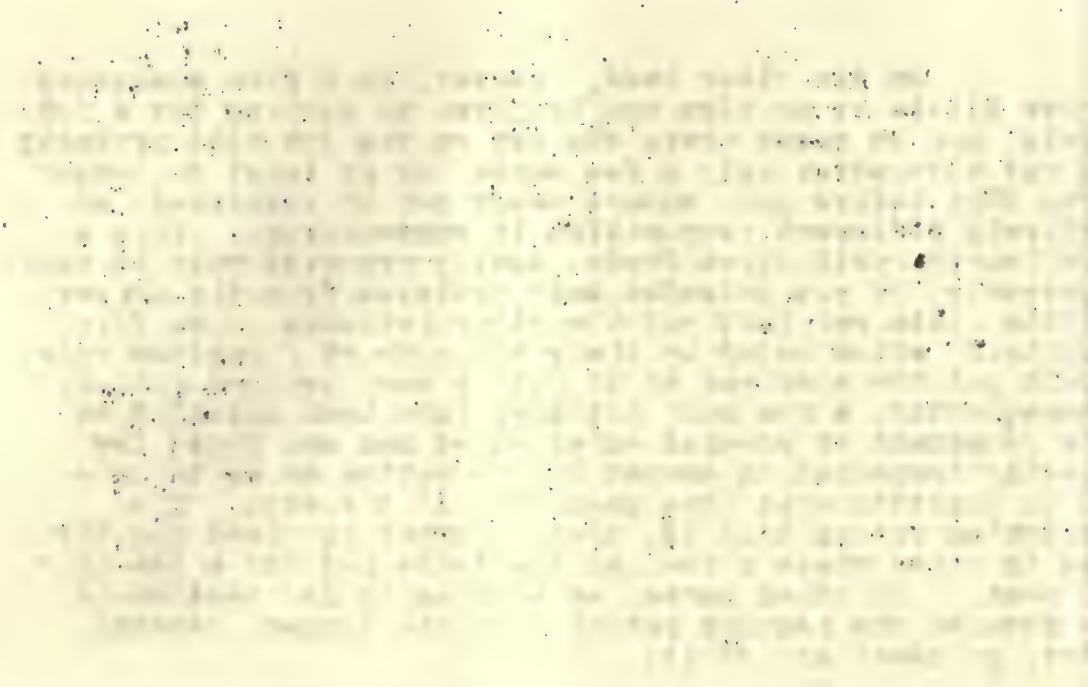
On the other hand, however, in a fire emergency, where little or no time can be given to cooking for a few meals, and in cases where the men on the job will probably be out altogether only a few meals, or at least no longer than that before good square meals can be furnished, an entirely different proposition is encountered. Here a few hearty, well-liked foods, easily prepared must be used. Obviously, if you selected such articles from the former ration lists and left out the other articles, your fire fighters, often using up their strength at a maximum rate, would get the poor end of it with a much reduced ration. Consequently, a few such articles have been selected on the judgement of several experienced men and these few heavily increased in amount in the ration so as to make up in quantity what has been lost in variety. The following ration list is, then, another proposed one for use in cases where a few men are to be fed for a few days at most. In other words, as soon as it is practicable to furnish the regular ration from the longer, general list, go ahead and do it.

Emergency Ration List.

	100 rations
Pork and Beans (1 lb. size cans)	130
Bacon (lbs.)	20
Canned meats (1 lb. size cans)	20
Bread and flour (lbs.)	100
Tomatoes (2½ lb. size cans)	100
Other vegetables (1½ lb. size cans)	30
Potatoes (lbs.)	50
Onions (lbs.)	20
Butter (lbs.)	30
Cereals (mush) (lbs.)	20
Coffee (ground, put up in tins) (lbs.)	30
Condensed milk (cans)	50
Sugar (lbs.)	40
Salt (lbs.)	8
Baking powder and yeast (lbs.)	15
Matches, sailor (boxes)	12
Candles, at least 6. ¾ of no. men x no. days	
Socks, cheap, medium weight cotton. No. men x 1½	

Totals:	lbs.	585	Boxes	12
	cans	400	Candles	
			Socks	

About 7.1 lbs. of food per day per man. Suggestions for changes in this are desired.



Supply lists can easily be made up from this. These may be figured out in advance of the fire season for from two to eight men for from one to about four days, each list given a separate letter, as; a, b, c, etc., and copies of all these left at different stores whence they may be ordered by letter over the telephone. In case a longer stay on the fire line than a few days is necessary such articles as are wanted can be ordered in proper quantities from the longer, general ration list, or else other supply lists lettered A, B, C, etc., to meet these longer cases may be prepared in advance from this ration list and left at stores along with the shorter supply lists. This making out of supply lists can be shortened by leaving out some and simply ordering "double small a" or "double largeB", meaning twice the quantities given in supply list "a" or in supply list "B".

Some fires there will be emergencies when it will not be possible to get food to the fire line for at least a number of hours. It seems entirely feasible to meet this in advance by making some use of the U. S. Army emergency ration as part of the regular equipment of fire guards. Each of these rations weighs eight ounces net and each is put up in three cakes of equal size, each cake wrapped in tinfoil, and all three enclosed in an hermetically sealed tin with key-opening attachment. THESE ARE NOT INTENDED TO BE SQUARE MEALS. They are intended ONLY for use in emergencies when no other rations can be supplied for a short period, say a day, and you want something wholesome and nourishing to keep you going until the square meal gets there. It is far better than having nothing in your stomach. This army emergency ration is composed as follows:

Chocolate liquor	45.45
Nucleo-casein	7.27
Malted milk	7.27
Egg albumen	4.55
Powdered cane sugar	21.82
Cocoa butter	3.64

It tastes better when swallowed without reading the table of contents.

H. de Forest.

RATION LISTS AND COOKING OUTFITS.

Food list for 4 men 2 days.

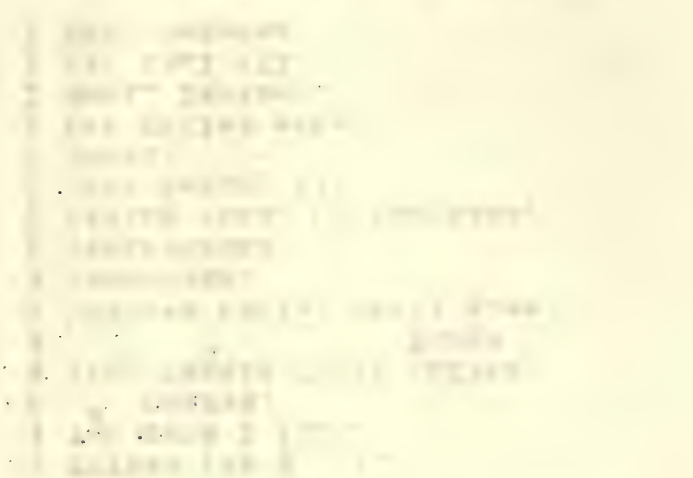
Tomatoes	4 cans
Bacon	4 lbs.
Ham	4 lbs.
Bread, crackers, or hardtack	10 lbs.
Cheese	2 lbs.
Sugar	5 lbs.
Syrup	1 qt.
Coffee	1 lb.
Condensed milk	2 cans
Butter	1 lb.
Baked beans	12 cans
Peaches	6 cans
Potatoes	8 lbs.
Onions	3 lbs.
Salt	1 lb.
Pepper	½ lb.

Cooking outfit for 4 men 2 days.

1 coffee pot ½ gal.
4 tin cups ½ pint.
6 " plates.
4 iron handle table knives.
4 " " " forks
1 butcher knife, small size.
4 teaspoons.
2 tablespoons.
2 frying pans, medium size.
1 wash basin, tin.
1 towel.
1 bar toilet soap.
1 small lantern.
1 qt. coal oil.
1 pkg. matches.

Food list for 8 men 2 days.

Bacon	8 lbs.
Ham	8 lbs.
Lard	3 lbs.
Hardtack or crackers	10 lbs.
Cheese	4 lbs.
Flour	10 lbs.
Bak. Powder	½ lb.
Sugar	8 lbs.



Syrup---------- ½ gal.
Coffee---------- 2#
Condensed milk---------- 6 cans
Butter---------- 2#
Dried apples---------- 2#
" prunes---------- 2#
Rice---------- 5#
Brown beans---------- 5#
Onions---------- 5#
Potatoes----------10#
Canned peaches---------- 8 cans
Pepper---------- ½#
Salt---------- 3#
Tomatoes---------- 8 cans

Cooking outfit for 8 men 2 days.

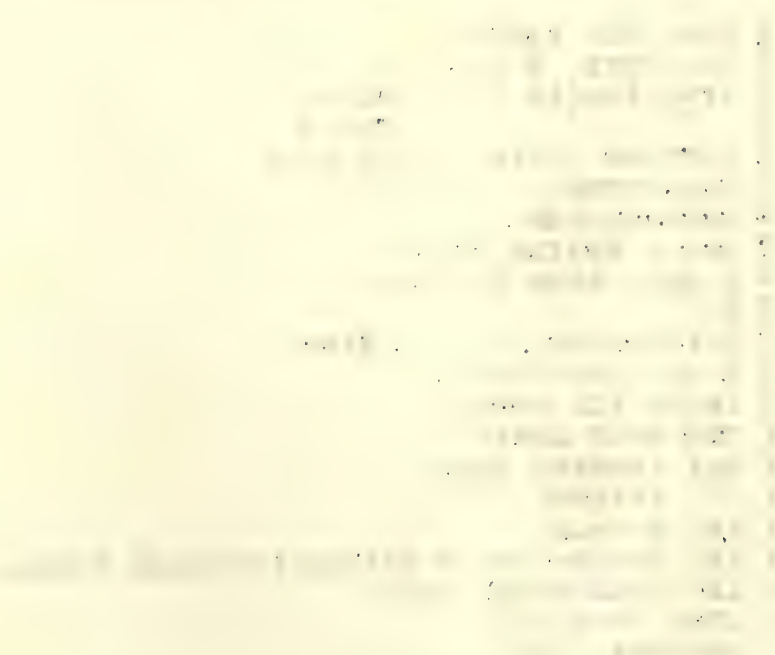
1 doz. tin plates.
8 tin cups, ½ pt.
8 iron handle table knives.
8 " " " forks.
1 butcher knife, small size.
8 teaspoons.
6 tablespoons.
2 large frying pans.
2 1 gal. stew kettles.
2 ½ " " "
1 coffee pot, 1 gal. size.
2 2 qt. tin basins.
2 large tin pans.
1 tin wash basin.
1 bar laundry soap.
1 " toilet "
1 pr. towels.
1 yd. unbleached sheeting for dish towels.
2 lanterns, small size.
2 qts. coal-oil.
matches, 25¢

C. A. Chamberlain.

RATION LIST.

For 5 men 2 days.

Bacon---------- 2½#
Bak. Powder---------- 1½#
Dried beans---------- 5½#

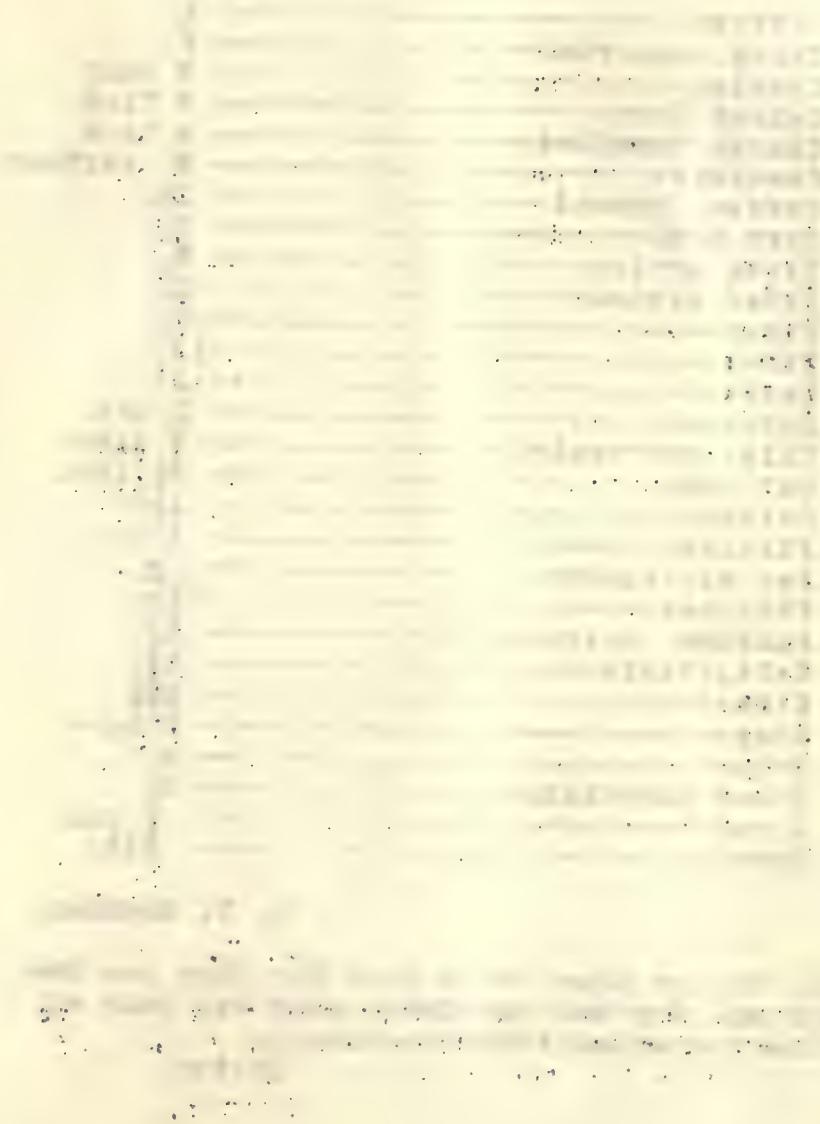


Butter	2
Cakes, assorted	5
Candles	3 only
Canned Corn	4 tins
Canned tomatoes	4 tins
Crackers	3 cartoon
Coffee, ground	1½
Corn meal	1
Dried apples	3
Dried prunes	2
Flour	10
Ham-1	14
Lard	5
Matches	1 box.
Milk, evaporated	9 tins
Oat meal	2½ lbs.
Onions	1
Pickles	1 qt.
Pepper, black	¼
Potatoes	15
Raisins, bulk	3
Salt, table	1
Rice	1
Soap	1 cake
Sugar	4
Sweet chocolate	2
Syrup	½ gal.
Tea	½lb.

H. W. Brannan.

Note: - Mr. Brannan also had a list for four men two days and for two men three days but lack of space prevented their inclusion.

Editor.



INSTRUCTIONS TO LOOKOUTS.

Equipment.

Forest Service Standard
compass with tripod or
jacobstaff.
Field glasses.
Forest map.
Scale, jointed in center.

This equipment should either be with you at the lookout, or quickly accessible. In addition there should be a rough table or box on which the map may be laid while you are locating fires.

Method of Reporting Fires.

When a fire is sighted, locate its bearing from your station by taking careful compass reading. In taking this reading it is not absolutely necessary that it be taken from one point only; sometimes a better view of the fire may be had a few feet away. Immediately report this reading, the probable distance of the fire from you, and its approximate location, to the District Ranger's headquarters. Whenever the District Ranger leaves his office for the field he will let you know to whom you shall report during his absence.

After having notified the Ranger, you will call up another lookout from whose station the fire can be observed, and request his reading on the fire. You will then take these two readings and locate the fire definitely by using as a protractor a part of the circle inscribed about the lookout point. This is done as follows:

Suppose that one reading is S 40° W from Hayfork Bally, and another is given from Dubakella as N 60° W. By taking the jointed rule, placing the inside edge of one arm so that it will show the direction S 40° W on Hayfork Bally protractor, and the inside edge of the other arm so that the direction N 60° W will be indicated on the protractor over Dubakella, it will be noted that the intersecting point of the two arms is in the NW¼ of Section 4, T 1 N, R 7 E, H M, or in Naufus Creek.

Now call up the District Ranger, and then the Supervisor, giving each the location of the fire.

Record on the proper forms all the foregoing operations as they are performed and write your name together with that of the lookout, at the end.

If District Rangers desire these forms may also be used by them in recording the data on fires reported by lookouts.

Also note in your diary any delay you may have experienced in getting the Hayfork operator or anyone else.

General Directions.

At the close of each day report to the District Ranger's headquarters stating that there are no fires, or giving condition of such fires as may be in your range of vision.

Notify the Supervisor whenever you think that any fire appears to be spreading rapidly. Often the men at a fire are not in telephone communication and it may be possible with this information to secure additional aid.

You should also thoroughly familiarize yourself with the use of the Forest Service Standard compass to avoid possible errors in reading it when fires are seen by you. This can best be done by using the compass quite frequently if you are not already proficient in its use.

Finally, it is necessary for each of you to realize that you are a most important part of our general protective system, and that it is up to you to see and report the fires in the territory under your observation. Last year the prompt discovery and notification of fires prevented several large burns and saved much money and time. We hope to be equally successful this year.

W.A.Huestis

Forest Supervisor.

The Forest Service Telephone

(Post Alongside the Telephone)

This telephone is connected with the Forest Service system. Connection with this system is not a privilege granted free, but is extended in return for very definite assistance by the user. The Forest Service asks that you observe faithfully the Six Rules, and that you influence your neighbors to do likewise.

1 Be sure your match is out before you throw it away.

2 Knock out your pipe ashes or throw your cigar or cigarette stump where there is nothing to catch fire.

3 Don't build a camp fire any larger than is absolutely necessary. Never leave it, even for a short time, without putting it OUT with water or dirt.

4 Don't build a camp fire against a tree or a log. Build a small one where you can scrape away the needles, leaves or grass from all sides of it.

5 Don't build bonfires. The wind may come up at any time and start a fire you cannot control.

6 If you discover a fire, put it out if possible; if you can't, get word to the nearest U. S. Forest Ranger or State Fire Warden just as quickly as you possibly can.

The fact that this telephone is in your home must be accepted by everyone as evidence that you are a part of the general organization for protecting the Forest from fire.

During the season of 1911 I received a great deal of help from all of you, and I hope to have your continued co-operation this year. This season promises to be particularly dangerous and I do not want to neglect any opportunities for better protection.

In addition to your assistance in fire protection, I want to repeat what I have previously sent to you regarding the use of the telephone. You can see how important a telephone is to us, and strict compliance with these rules is necessary:

The use of all Service telephone lines and instruments will be free to the public until the free use becomes burdensome to the Forest officers, or interferes with the efficiency of the system for Service use.

The excessive use of the instruments is not only detrimental to the prompt transaction of Service business but seriously impairs the efficiency of the instruments. Therefore, it should be avoided.

The lines are built primarily for the transaction of official business, and it is imperative that this purpose shall not be defeated by excessive private use.

The following regulations must be observed in the use of this telephone, otherwise the efficiency of the Government telephone system will be impaired and this telephone will be subject to removal.

1 When the receiver is taken down, immediately ask over the line, "Is the line busy?" and hang up the receiver at once if the line is busy, unless in case of emergency.

2 No one has the privilege to the use of the line unless he replies when he hears the question "Is the line busy?"

3 Do not use this telephone longer than five minutes for visiting during office hours.

4 The batteries weaken rapidly while the receiver is off the hook.

5 Common courtesy, as well as the efficiency of the service, demands that receivers must not be taken down and left down when other parties are talking. This clause MUST be observed; we cannot talk unless the line is entirely clear.

W. A. HUESTIS,
Forest Supervisor.

Printed Form for Use by Lookouts.

1. Date----------
2. Time fire sighted----------
   o'clock-----M.
3. Reading----------
4. Probable location----------
   ----
5. Distance approximately-------
   Miles.
6. Reported to----------
7. Called up----------Lookout
8. Who gave reading----------
   ----
9. Located fire in ----------
   Creek or----------ridge
10. In----¼, Sec.----, T-------,
    R.------.
11. Reported location to---------
    and-------at ---------o'clock
12. Remarks:

Signed----------
----------Lookout

The Patrolman's Equipment.

Now as the fire season is close at hand and fire protection work will be our most important duty in the near future, I would like to suggest what I think the necessary equipment a model patrolman should carry each day while on fire patrol.

I base my idea on where a patrolman rides each day from his camp or headquarters and not where one is wandering throughout the district camping where night overtakes him.

The first of importance is a good horse and rig complete, including saddle bags. The tools he should carry are a light short-handled shovel and a 2¼ single bit ax with a thirty-inch handle. These should be carried by tying to the pommel of the saddle with the handles pointing back between the stirrup leathers, ax on one side and shovel on the other. He should also carry either a canteen or a water-bag. I prefer the South African 2½ gallon water-bag for this work. He should have a good field glass and a good revolver strapped over his shoulders. In addition to this he should carry in his haversack or saddle bags, a note-book and pencil, a copy each of the State Fire Laws and Trespass Manual, a package of the first aid to the wounded, pocket compass, a clean pair of socks, and enough grub already prepared, for at least two lunches.

Also tied on behind his saddle he should carry enough rolled barley for two feeds for his horse, and an extra pair of old shoes for use should he run onto a fire.

As the ordinary daily patrol routes do not generally exceed twenty miles. I believe a horse can carry a man and this equipment without hurting him in the least and as a man never can tell what minute he will have to jump onto a fire, with this outfit he would be prepared to do business.

R.P.Box.

THE USE OF POWDER IN FELLING TREES.

At the last Ranger Meeting there was some discussion regarding the use of powder in felling snags. Information along this line was requested from the Klamath Forest, where powder had been used in felling trees in connection with insect control work. In this work fifty trees were felled with the use of powder, and the following information is taken from Mr. Miller's report relating to this work:

> "Giant No. 1 and No. 2 was used entirely in felling. The cost of the average tree was as follows:
>
> | | |
> |---|---|
> | 4½ sticks of powder | $.25 |
> | Time of one man (30 minutes at 30 cents per hour | .15 |
> | Total | $.40 |
>
> This method has a number of advantages in felling the scattered trees:
>
> 1. It is not necessary to carry a number of heavy tools (saw, wedges, hammer, etc.,) from one tree to another.
> 2. The shock of the blast loosens the bark near the base of the tree which assists some in the peeling.
> 3. It is possible by this method for one man to perform alone the entire work of felling the tree and burning the bark. This will be found of considerable advantage where Rangers wish to remove isolated infested trees.
>
> Its chief disadvantages are:
>
> 1. Considerable experience is required to know how to use the powder and secure the best results.

2. Powder is not always obtained in remote places and it is not easily transported in bulk.

The equipment needed, besides the powder, caps, and fuse, is a good sized 2-inch auger and a light axe. Some knowledge is needed to know how much powder to use and where to place the charge.

It was found best to assign the powder work entirely to one man with a helper. As soon as a tree is felled the two men can work at the peeling and burning until this is started. While the helper is completing this the powder man can locate, bore and shoot another tree.

The auger hole is bored in the tree at a point about 20 inches from the ground and on a slight downward slope. The charge is placed a little past the center of the tree"

Mr. Miller's conclusions are that a cross-cut saw is more advantageous than powder where two or more men are working together: that two men can fell a tree with axe and saw as quickly and as cheaply as with powder. The use of powder is found to be advantageous where one man must work alone.

Each Ranger has been furnished with two pamphlets pertaining to this subject - Bureau of Plant Industry Bulletin No. 239 "Cost and Methods of Clearing Land in Western Washington", (pages 13-20), and Farmers Catalogue of the Du Pont Company, furnished by Junkans, Hanna & Ryan.

MISCELLANEOUS CLIPPINGS.

WASHINGTON, D. C., June 4.- The Indian appropriation bill as reported by the Senate Committee contains two new items of interest to the lumber trade. One is for an appropriation of $100,000 for the prevention and control of forest fires on Indian reservations. The other appropriates $20,000 to be immediately available, for the purchase of a sawmill and logging equipment and the employment of persons to log and manufacture burned timber on the Flathead Indian Reservation in Montana, and to protect the remaining timber from fire and trespass. The appropriation is to be reimbursed to the Government from the sale of lands and timber in the reservation. This amount of this appropriation was estimated by Secretary Fisher at the beginning of the session. The committee says:

There is a large amount of fire-killed timber on this reservation which is rapidly deteriorating in value and must be manufactured at once, otherwise it will be a total loss. Inasmuchas it will save the property of the Indians, amounting to thousands of dollars, it is apparent that it will be a good business proposition if this money should be made available.

American Lumberman.

Forest Protective Force Strengthened.

By an order issued May 31st, Postmaster General Hitchcock has strengthened the forest fire-preventive force by almost 55,000 men. These men are the rural and star route carriers of the postal service, who are directed to cooperate with the Forest Rangers and State Fire Wardens whenever and wherever possible.

Forest fires last year destroyed approximately $50,000,000 worth of property. The Department of Agriculture has been anxious to increase in every way the efficiency of its preventive service. Postmaster General Hitchcock has found the way to offer assistance, and as soon as his plan was found feasible the order referred to was issued.

American Lumberman.

The sundry civil bill as reported to the House by the Appropriations Committee carries $500,000 for protecting public lands and preventing depredations on public timber and regulating the cutting of timber.

American Lumberman.

Fire Prevention in California.

Fort Bragg, Cal., June 4, 1912.

The Timberman: In regard to the work we are carrying out for fire prevention this year, will say that each member of the Association has undertaken to build trails on their lands under the supervision of this Association, and so far some twenty-six miles of new trails have been completed this year.

At a meeting of the board of directors an assessment of one cent per acre was levied to cover costs of patrolling, getting out fire warning notices, and general office supplies.

H. B. Muir,
President Redwood Fire and Protective Assn.
The Timberman.

NEWS FROM THE DISTRICTS.

District No. 1-Big Bar. May 15, 1912.

Since the last issue of the Trinity Forester, I have been informed that the appropriation will be very light for the next fiscal year, It isn't a wise plan to abandon any of the projects now on hand. My solution of the situation is for the Rangers to help each other on all improvements where they are receiving the same benefit as the other, such as cabins and pastures on lookout stations where more than one District is benefitted.

Improvements: Since the last publication, I have completed a half mile of new trail, fifty panels of new fence on the Big Bar Ranger Station, and the tool-house and blacksmith shop that was started last January but abandoned until the weather settled. I have now on hand, sixty new trail signs that I painted on rainy days that will post nearly all the important trail and road crossings in my District.

Insects. The caterpillar plague is not spreading so fast as in the early part of the season. I have noticed small groups of Yellow and Sugar Pines that are being killed by the bark beetle. The infested trees are identical to those in Hayfork.

Forest Planting. An examination shows that the yellow and sugar pine seed planted on Corral Creek area P 13, is germinating.

" The locust trees set out on the Big Bar Ranger Station are all doing fine and promise to be a success.

June 25, 1912.

Improvements. Assistant Ranger Elmgren and Guard Dahlstrom devoted the first ten days of June to the cutting of the timbers for a cabin on Beaver Bally Lookout Station. The cabin will be constructed as soon as the timber is seasoned and the snow goes off.

The balance of the month Asst. Ranger Elmgren has been devoting to posting fire warning notices, counting stock that were entering the Forest , fire patrol, and getting the telephone lines in repair before the fire season.

Guard Dahlstrom and myself have devoted the greater part of the month in posting trail signs, and constructing the Blue Ridge Pasture fence which is almost completed.

Silviculture. The seed crop in District No. 1 is a failure although a few scattered trees of the different species have a half crop of cones.

H.W.Brannan.

District No.2-Hyampom. June 1, 1912.

During the latter half of May the building of a barn at the Hyampom Ranger Station has been the center of interest for the District force, and for a good part of the Valley as well. When the shakes have been put on the roof, doors hung, and some interior work done, this improvement will be completed.

Material for the new South Fork River telephone line has been ordered, though the construction of the line will have to depend upon the opportunities the season affords. Residents along the route have agreed to assist the Service in packing in material and in construction work.

During the latter part of June or early in July, a cabin will be built at Blake Lookout on South Fork Mountain.

Recently some time has been given for the necessary repairs to existing telephone lines in order to fit them for the protective work of the coming summer; a few Homestead Applications have received field and office attention, and some Free Use permits have been issued.

Supplies will shortly be packed in to lookout and patrol stations and in connection with other work, some surveying of pastures will be done.

The chasing up of a couple of thunder storms over Indian Valley has taken a little time, luckily, without any damage being discovered; and the opportunity was made use of to connect the telephone system of this fire district and install the instrument for summer use.

Considerable office time has been given to going over the fire protection plans for District 2 and some time in the field as well, has been used for this work.

June 22,1912.

The Hyampom Ranger Station house is ready for the walls and partitions, the flooring and stairs having recently been put in. The lateness of the fire season may permit additional construction work on this project before summer.

The material for the Indian Valley-Limedyke spur telephone line is arriving and this line will be got under way at once.

Lookout and patrol stations have been equipped with fire supplies so that the sending out of the men who will have charge of these posts may be done at any time.

Recently several permittees in different parts of the District have been seen and an opportunity thus afforded for talking over matters of mutual interest.

H. de Forest.

District No. 3-Hayfork. June 22, 1912.

Assistant Ranger Cuff and Guard Duncan have been busy repairing the telephone lines on this District. The lines are now in first-class shape for the fire season.

Messrs. Cuff and Duncan are at present brushing out for the line to be built from Hayfork to Douglas City.

Assistant Ranger Dougherty moved to Peanut last month, and was stationed there in tents for a short time. He now has quarters in Hayfork.

During an electrical storm on June 5, a fire was started on Chanchelulla. It did not amount to much, about one and a half acres, and Ranger Patton and Assistant Ranger Cuff had a hard job getting there before it burned out. The greatest damage done was to Patton's shoe. Patton managed to snag a hole in his shoe and then let a live coal get into his shoe through the hole caused by the snag. Cuff doesn't remember just what Patton said when the coal got next to his feet and it is probably just as well that he doesn't remember the exact words for we would hate to cut out <u>any</u> news from the Forester.

Ranger Patton has gone to Red Bluff to get a lead; (of grub, we suppose).

J.M.Dougherty.

District No. 4-Knob. May 15, 1912.

District 4 headquarters was recently visited by Mr. L. A. Barrett, Assistant District Forester, and Supervisor W. A. Huestis. It was arranged at this visit to make a change in the boundary between Districts 3 and 4 by taking about a township off the south-eastern portion of District 3 and adding it to District 4. The District headquarters being at Knob, it does not seem logical to expect a Ranger, with headquarters at Peanut, to come over around Knob to perform administrative work when another Ranger is stationed there; hence the change. This addition will be patrolled

this season by an extra guard. Mr. Barrett and myself spent a day in the field looking out this patrol. The guard will probably be stationed at the Farrison Gulch Creek Ranger Station.

I am pleased to know that Alva Tracy is now Assistant Forest Ranger in this District, commencing his duties May 1.

Frank D. Bucklew began his duties under appointment on June 1 in this District as Assistant Forest Ranger.

These men have done faithful work in the Service as Guards for several years and it is right that their services should be recognized.

Frank D. Bucklew and his wife went to White Rock Station early in May. Mr. Bucklew will be busy repairing fence, clearing land, plowing and seeding land at this station, as well as making the cabin more suitable for residence.

It is to be regretted that the District appropriations will be so small the next fiscal year, but am hoping that District 4 will be allotted sufficient money to extend our line to Saddle Camp, near Tomhead, when it will be practically through the District. This line will be commenced sometime in June as about six and one half miles of wire are already on hand at White Rock Station and five miles more are at Knob and will be packed out to the station early in June. The distance is about twenty-five miles from White Rock. Mr. Tracy will make it a point to look out the route for this line and to do all the brushing out possible to lighten the job when we get over on that side.

Harry Everest.

Notes on Fires.

After four years of patience and perseverance I am at last Assistant Forest Ranger. Although the additional salary is no great amount it pays for many little necessaries in life that my family would otherwise be deprived of. THEREFORE IT IS HIGHLY APPRECIATED.

With the counting in of stock, improvement work, and the necessary fire protection, I cheerfully see a busy season before me. I regret that the Tomhead sawmill will not be in operation this season since when it is in operation there are always a half dozen or so fire fighters available at that place. However, the construction of a telephone line from White Rock Station to Saddle Camp will be

carried on this season - therefore the construction crew will be at our command if we should need them - otherwise we would have to depend on patrolmen only, as District 4 is very remote from settlements.

I have read the last issue of the Trinity Forester with great interest as it contains much valuable information. I have taken special interest in Ranger Patton's article on Patrol vs. Lookouts. Mr. Patton's experience relating to the value of lookouts during the smoky weather is precisely the same as my own but I will say that I have found lookouts of service during smoky weather by visiting them after dark. Even if the fire is on the opposite side of a small ridge from lookout the light will often show over the top of the ridge. The only disadvantage connected with this plan is the deception in the distance of the fire from the lookout, although a little experience develops fairly good judgement in that respect.

I will relate an instance that occurred last November after my appointment as Forest Guard had terminated. I was still at Saddle Camp and awoke one morning to find the mountains so full of smoke I could not see over one mile. I started on patrol feeling confident there was a fire not far away. After spending a very unsuccessful day I climbed Tomhead Lookout at dark. The fire was quite visible on the North Fork of Red Bank Creek, east of Elkhorn Mountain, outside of the Forest. I could not have located this fire under two days patrol. The smoke was so thick in S.F. of Cottonwood Creek Canyon I could not tell there was a canyon there. It passed over the divide at the heads of S.F. Cottonwood Creek and S.F. of Trinity River so as to attract attention in Ranger Gray's District, causing a telephone message to Ranger Everest that there was a fire somewhere about North Yola Bola. Everest, making a hurried trip to the south side of Yola Bola, found no fire. If the telephone had only extended to Saddle Camp, I could have saved Ranger Everest that long ride.

Alva Tracy.

District No. 5.-Mad River. May 8, 1912.

The past month has been devoted chiefly to administrative work, claims taking first place. Examinations and reports were made on five homestead final proof cases and hearings attended in the cases of three squatter claims, (timber lands).

Work has progressed very nicely on the house at the Mad River Ranger Station; eight days were spent on this work in which time the frame was constructed and the building is now ready for its roof and finishing. This work will probably be delayed for some time inasmuch as we are unable, at present, to secure necessary lumber from the local mill.

Assistant Forest Ranger S. A. Shields was re-appointed April 20 to this District and is now engaged in repairing telephone lines damaged during the winter and in looking after the stock entering the Forest. There has been but few stock as yet (May 8) entered the District from outside ranges, probably from the fact that there is plenty of early feed on the ranges outside the Forest.

A rain gage has been recently installed in this District but arrived too late to record the recent heavy rain, however, from other sources 9" of rainfall is reported as the record from April 28 to May 3. This storm was much needed and was greatly appreciated by the stockmen since it will no doubt, insure a heavy forage crop on the range.

John T. Gray.

District No. 6.-Willow Creek. May 1, 1912.

I repaired all telephone lines in this District for the summer, except the line from Panther Creek Ranger Station to the boundary of District 2.

Besides the repair of the telephone lines most of the time for the past month has been taken up in making June 11 examinations.

David T. Haas has been assigned to this District to assist in administrative and improvement work, besides the patrol and fire protection work during the fire season.

June 20, 1912.

The telephone line has been constructed from Happy Camp to Johnson's Corral on Grouse Mountain and the line from the Panther Creek Ranger Station to the main ridge of the mountain has also been finished. These telephone lines will give patrolmen on Grouse Mountain an opportunity to report fires without leaving the main ridge.

The brush on the Perigot timber sale area was burned this month.

Assistant Forest Ranger Haas and Guard McNeil finished the trail between the Douglas ranch and Racoon Creek and have moved their camp to Trinity Summit where they will do some more trail work. Some posts will also be gotten out for the pasture on Trinity Summit.

Recent rains and the foggy weather have eliminated the fire danger for the present, and I think that there will be little further danger of fire in this District until after July 1.

Frank A. Graham.

District No. 7.-Stuarts Fork. June 1, 1912.

Since our last letter, Assistant Ranger Box and myself have been busy surveying the Humboldt Mining Company's mineral claim, counting stock, surveying a right of way for a trail and telephone line across railroad sections to Granite Peak Lookout, and brushing out a trail to pack our wire over for our lookout line. We have put about one and one half miles of trail in shape to use, and looked out and blazed about four miles of the route for our telephone line. If the snow had not prevented us, we would have had both our trail and telephone line routes definitely located at this time.

Two men began work on the Trinity Mountain Ranger Station barn May 18 and will probably have it completed by the 25th. Our Buckeye barn built last year proved to be too narrow, it being only twelve feet wide, so I instructed the carpenters to build this one fourteen feet wide. This change made it necessary to get out two end sills and ten poles for floor joists, and may necessitate the buying of a few extra shakes and boards, but I think the benefit in having the two extra feet in width will more than justify the extra expense.

Our telephone wire is at Lewiston now and as soon as our trail to the foot of Granite Peak is completed, we will pack our the wire and begin building the line. We expect to build this line and a trail to the top of Granite Peak before the first of July by Ranger labor.

Since the Trinity reconnaissance crew is to be scattered this season, we would not object to one or two good, technical fellows lending us a hand in the construction of this telephone line and trail. How about this, Mr. Supervisor?

Extra.

I put one over on Assistant Ranger Box not long ago worth telling about. Our lookout telephone instrument arrived during his absence, which weights somewhere around fifty pounds. I took it out of the box and when he came home told him that we had received a sample portable telephone instrument to be used by patrolmen, and invited him in to see it. On first sight Box said, "Whew, that's a hummer", but when he tried to pick it up he said, "Great Scott, a man will need a pack horse to get that thing around with". Of course its up to Box to treat.

June 25, 1912.

On June 1 Assistant Rangers B. F. Viles and John Molin and Forest Guard J. H. Cummings reported for duty at District Ranger's headquarters. They were turned over to

Assistant Ranger R. P. Box, who had been waiting their arrival and who had a supply of axes, shovels, mattocks, and picks ready for their use. Since their arrival a very substantial showing has been made in trail and telephone work. The Granite Peak telephone line has been constructed a distance of five miles, the right of way brushed out, and the brush piled in good shape. An emergency telephone line has been built from the top of Brown's Mountain to L. P. Poage's cabin on the La Grange ditch, a distance of two and a quarter miles, and a short line built from the Costa ranch to W. F. Junkans' place on Rush Creek, a distance of one and a quarter miles. Phones were installed at both places by the District Ranger, which seem to be working well. At present, the boys are repairing the Minersville-Weaverville line, which needed a few new insulators and much brush removed. Grade work was done on Granite Peak trail and the trail following the Trinity Mountain telephone route. To have much more improvement work in sight and if the weather conditions continue favorable we expect to prove that Ranger labor is cheaper to the Service than temporary or contract labor; all points considered and that their class of work will average a superior quality.

C. A. Chamberlain.

PERSONAL.

This month Supervisor Huestis and Mr. George Reid spent several days installing the lookout on Beaver Bally Mountain. The emergency wire for the temporary telephone line has been laid, the trail brushed out, and arrangements are being made to erect a cabin. Mr. Reid will be Lookout this summer, and will report all fires to the Supervisor's office.

We were sorry to hear that Assistant Forest Ranger Woodhams suffered an attack of ptomaine poisoning this month, he was confined to his bed for several days but has now almost entirely recovered.

Mrs. F. H. Hafley and children have left for Berkeley, where she and Mr. Hafley will make their future home.

Mr. Evans left on May 15 for the Klamath Forest where he has a temporary assignment to reconnaissance work. It is probably, however, that by August 1 this will be completed and that his services can be secured for the Trinity in the insect reconnaissance work.

Deputy Forest Supervisor Coffman spent three weeks on the Klamath Forest with Messers. Burke and Miller studying their methods of insect control work. Incidently, Mr. Coffman bought two horses while on his trip.

Supervisor Huestis has now fully recovered from the illness which forced him to abandon his trip with Mr. Barrett last month.

Ranger Patton spent several days at Red Bluff during the past week.

Miss Ruth Trimble is now in the Forest office doing some mimeograph and other office work that has accumulated during the past few months.

Ranger Garrett took annual leave for a short trip to the coast this month.

Forest Supervisor Huestis will spend about ten days, beginning July 1, in District 1 with Ranger Brannan.

Ranger Gray spent several days at Eureka at the Eulett land case hearing.

RANGER MEETING. Without doubt all those present at the recent Ranger meeting were greatly benefitted by the papers and discussions on that occasion. From the exchange of ideas and opinions each one of us has been able to gather some suggestions for the betterment of his own work. If we fail to put to practice the helpful suggestions we have received, we will have lost one of the greatest benefits to be derived from the meeting. Or if we have failed to gain a stronger feeling of unity as a Forest organization and of loyalty for the Service, we have missed the purpose of the meeting. However, it is merely to emphasize these points that they are mentioned here, and not because there is any fear of a lack of appreciation of their importance on the part of anyone.

The papers read at the Meeting show careful preparation and are full of valuable information and suggestions. It is the purpose of this issue of the Trinity Forester to make a permanent record of these papers and of the proceedings of the Meeting for review and for reference. We regret that it impossible to give the talks of those men who spoke either extemporaneously or from notes only, especially the very interesting talk by Dr. Heinecke.

FISH AND GAME PROTECTION. In the past some Forest officers have been inclined to feel that the Forest Service, by emphasizing the necessity for complete and impartial enforcement of the Fish and Game laws, was more zealous in this regard than the State Fish and Game Commission. The statement made by Fish and Game Commissioner G. O. Laws at the Ranger Meeting, that he had been instructed by Mr. Newbert, President of the State Fish and Game Commission, to prosecute all violations and make no exceptions in any shape or form, should put an end to all feeling of a lack of support by the Fish and Game Commission. As Mr. Laws stated, it is a choice on the part of paid Commissioners between impartial zealous prosecution of all violations and dismissal. With these instructions from the Commission to its own men, Forest officers need feel no lack of backing and cooperation on the part of the State Commission.

CO-OPERATION WITH THE WEATHER BUREAU. A rain gage and maximum and minimum thermometers have been installed in the yard at the Weaverville office, and a daily record of rainfall, maximum and minimum temperatures, and other observations is being made for the U. S. Weather Bureau.

The Weather Bureau has also shipped three additional rain gages to the Trinity Forest to be installed at Harrison Gulch, Hampton and Ruth at District Rangers' headquarters. Those stations, together with the one in Weaverville, will enable the Weather Bureau to secure much more accurate information with regard to the climatology of this region than it has been able to obtain in the past.

J. J. DOUGHERTY. We take pleasure in welcoming to the personnel of this Forest Assistant Ranger Jefferson D. Dougherty who has recently been transferred to the Trinity from a similar position on the Cleveland Forest. Before assignment as Assistant Ranger to the Cleveland, Mr. Dougherty held the position as Forest Clerk on the Kern Forest, and previous to that as Forest Clerk on the Black Hills Forest in District 2. He also served in the U. S. Army in the Philippine Islands from 1902 to 1905. Mr. Dougherty is accompanied by his wife and small son, and for the present is stationed at Weaverville. We regret that he did not arrive two weeks earlier in order that he might have been present at our Ranger Meeting and have had the opportunity to become acquainted at once with all the other Rangers on the Forest. He is, however, gaining a vast respect for the "volume" of the Meeting and securing some familiarity with its proceedings by operating the mimeograph for this issue of the Trinity Forester.

ASSISTANT RANGER ELIGIBLE LIST. The list of Civil Service eligibles for the position of Assistant Forest Ranger has just been received, and according to this list, nine out of the fourteen men who took the examination at Weaverville have passed. These men are as follows:

Harry S. Yates
Ivan A. Cuff
Bruce F. Viles
John A. Colin
Francis D. Bucklew
Howard H. Griffitts
David W. Haas
Cyrus W. Zeigler
William Thomson

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VALUE OF THE FOREST SERVICE TO THE COMMUNITY, AND PLAN IDEA AND ECONOMY.

By Assistant District
Forester
John H. Hatton.

The value of the Forest Service to the community may be stated in different ways but without a concrete larger account of this particular locality at hand the subject is pretty hard to express, or the other hand, pecuniary or dollars and cents are not always proper measures of values. Besides there are many differences of opinion as to what should be included in such a statement. Looked at from the broad point of view, I believe there is no question but the Forest Service is contributing to the general public principle of "the greatest good to the greatest number in the long run." On the other hand I can conceive of instances where local communities might be adversely affected or hindered from acquiring temporary advantage. The very temporary nature of such advantage, however, takes it largely out of the running when we consider the broader public principles and the larger public benefits. If, however, all local communities were restricted in substantial and permanent development there could be no valid excuse for our existence.

The old stage coach has been supplanted all over the country, (not quite, I mean,) by the railroad. Freighters like those coming into these interior towns used to be very common in the valleys as well as in the mountains and the ore mines in this district; and a considerable population more than at present profited by these pursuits. But no one questions the vastly greater importance of the railroad over stagging or freighting, even though regulation sometimes becomes necessary through state and inter-state laws to prevent excessive charges, nor does anyone question the necessity of the pioneer in the development of any country. Yet the temporary advantage of a few people engaged in these so-called pioneer pursuits was lost with the advent of the railroads. Labor-saving machinery has displaced a lot of manual labor, the electric car and the auto truck the horse, and many other illustrations of progress might be cited where a few have lost temporary advantage but where a lot more people and posterity have been immensely profited. Anything which contributes to stability and the permanency of public resources and institutions or the people's necessary pursuits and means of livelihood may be counted as benefits. And that is the basic principle upon which the Forest Service is founded. The Forest Service policy is one long step in our country's progress. If in our administration of the work of the Service

to fail to realize to the people now and permanently these basic principles; or if our policies were such as to take this possible, then we are either doing our work wrong or the service has not found sufficient excuse for its existence. There is nothing wrong with us as a public institution. I said that temporary occasional advantages may be lost to a few people. But we can't help that. They are lost because they do not or cannot be made to contribute to the maximum permanent good.

But looking concretely at the present value of the service to local communities or states, and considering values from a closer standpoint: three-fourths of a million dollars are spent in California each year in the administration of the National Forests. Most of this goes directly into the channels of trade. I never heard of a Forest officer's money getting very far away from him before it found a market, besides a lot of money spent in improvements such as trails, roads, telephone lines become direct assets to the people most intimately affected by the Forests. The Trinity Forest furnishes many illustrations of such benefits. Take the trail down the Trinity River and your telephone system which doubtless would still be things undreamed of instead of realized if it had not been for the Service.

I might mention the receipts which are returned to the counties by the 25 per cent clause. This in the state amounted to over $50,000 last year and will increase rapidly as large timber sales come into operation and more water power permits are issued. In time the revenues from the sale of National Forest products will greatly exceed, (and will at the same time be permanent), what might have accrued temporarily to the counties most affected by National Forests by the private acquisition and exploitation of our timber and other mountain resources. There is no question about this in my mind.

Then there are the other benefits of forest protection and range regulation. A good many people disagree with us in this being of value to them, but there is no question that it is better to protect and conserve the timber and range resources than to burn them up and overstock or waste them. Of course, I'll admit that on natural forest producing country with complete protection the range resources may diminish. This is true of some of the Trinity Forest. But you will be interested in learning that the very fact of bringing our ranges into normal condition and use shows all over the National Forests that we are actually accommodating more livestock now than were accommodated when we first took hold. The total livestock authorization for this year over the District exceeds that of last year; and we expect next year's to exceed this.

There is no gain to the public, however, in the mere exercise of authority. If we upset local conditions generally and interfere with local business we must justify our action by greater permanent benefits: On the other hand, I believe it is necessary to adjust our management to the real needs of local communities. I think this can be done and still adhere to the broad general principles.

We are here to manage the people's resources. Mr. Headley has well stated "The object of Forest management is to secure the maximum net benefits for the public through the protection, utilization, development and distribution of these natural resources."

Now to secure such benefits there must be certain economy in administration - there must be regard for the proper expenditure of funds, just the same as if you were hired to manage a corporation or a private business. I think so thoroughly incensed me as to hear of some public official in charge of public funds just wasting them because they are public funds - unless it is to hear people remark: "Well, the Government is paying for this and I'm going to get out of it all I can whether I am entitled to it or not. Uncle Sam has lots of money and he is legitimate prey." A lot of people think this way about public affairs and public funds. I don't think the accusation could be lodged against many officers in the Forest Service. What I want to say is that members of the Service are not wilfully cheating the Government out of its just dues. They would resent such an accusation as a personal affront. But if we stop and think, are we sure that we are making the most of our efforts? On the other hand niggardliness or stinginess is not economy. We must spend money to save money. There must always be a certain amount of initial investment if we are later to get maximum returns.

Now what have the value to the community and economy in administration to do with the plan idea? I should say they are inseparable. No piece of work can be well done or economically done unless it is well planned. There is no question that there has been a lot of lost motion in the Service. The plan idea is just a little easier and simpler way of saying "scientific management," which has been frightening so many of us in this District during the last year or so. And what is 'scientific management?' There is certainly nothing new about it. It is as old as human activity. Men from time immemorial have applied the principle, often unconsciously, in the acquisition of gain. It means the greatest possible results from the expenditure of a given amount of energy or effort. If I were to turn over to one of you men a ranch which under normal conditions of climate and soil productivity would produce a crop and the end of the year showed more of an average [illegible] for

my bank account I would employ you next year if I could get you perhaps at an increase of salary, because I would afford to - your management was good. I am scientific. If on the other hand you managed my affairs so that I had to draw on what little surplus I had in the bank to keep you going, I should let you go - your management was bad. It was not scientific. You probably had no definite plan before you. There was lost motion, extravagance, bad judgment - something essentially wrong. I'd look for another manager.

So it is with our work in the service. An hour of time or a dollar in money which belongs to Uncle Sam is just as valuable as an hour of time belonging to any business man or a dollar of anyone's money. We are managing the people's property. They pay us money to do it. They are entitled to good results.

The value and economy of applying the plan idea was well shown in this District the past season in our fire protection. It was particularly well illustrated on your own forest as shown by the pretty green shovel with the gold lettering occupying such a conspicuous place in your office. There were 50 more fires in the District in 1911 than in 1910 but the loss in 1910 was 10 times greater than in 1911, because there were 17 per cent more Class A fires in 1911 than in 1910. And Class A fires mean better organization - better plans for meeting the fire situation. The Ranger who works out his protection plans so that this year he can reduce the average time which it takes him to get at work on a fire and put it out over the average time it took him last year is working out and applying the plan idea or the principle of scientific management. Likewise the Ranger who plans his administrative work so that he is not always back-tracking, but is making each trip count for all that it is possible to make it count, if he lays out his trails and improvement projects so that they will be useful 10 years from now as well as at the present, he is applying the principle of economy in Forest administration. He is helping to make the service of real value to the community.

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RANGERS OFFICE WORK.

By District Ranger Harry Everett.

Clerical Work in the District Ranger's Office. The diversified nature of the Ranger's work in the field naturally entails considerable office work, usually more than he wants, and during the fire season especially - more than he can attend to promptly. We all know the manner in which correspondence and other matters pile up during an absence of a week or two in the field, in fact I believe that in the majority of cases the aforesaid pile has an unfortunate but decided tendency to grow larger and larger, until, at the end of the field season - which last year was the end of November, the Ranger can see very clearly that to get his back work cleaned up and attend to the current work that is coming in right along, will keep him fully occupied during the winter months, even if the severity of the winter weather should prevent him from doing much outside work. One factor that I think influences the pile of matter at times awaiting the Ranger's attention is the fact that clerical work has been thrust upon him rather late in life, the majority in fact have probably never become acquainted with this kind of work and find it across somewhat hard in the learning. Can anything be done to help this state of affairs? All the District Rangers on the Trinity have been furnished with typewriters, the operating of which they have hardly been able to learn by system. In my own case I commenced using my machine directly after it was received. The consequence is, it seems to me, that the desirable rate of speed falls far short of what it should be for quick work.

A knowledge of shorthand would be an important factor in curtailing the amount of time consumed in office work and would do away to a great extent with the longhand pencil work necessary in preparing letters, reports, estimates, improvement plans, etc., for typing. The Rangers could perhaps find opportunities to strain a point - or perhaps two points, in acquiring a knowledge of shorthand and perhaps do something towards becoming more expert typists by practicing the touch method. While on this subject I want to mention an idea of Ranger Patton's that he spoke of to me last season. I am sure he will not mind and now I should think is an appropriate time to discuss it. Although Ranger Patton will probably give you his idea in better shape, it was that a Forest Clerk should when necessary, visit those Rangers whose office work had piled up and assist them in getting the accumulated matter disposed of. Personally I think this a good idea, but of course it would only apply to those Rangers who are at times swamped with office work.

The time given to the various kinds of office work in different districts will of course vary considerably. A good proportion of the time in one district may be occupied in timber sale work, while in another this class of work may not enter at all. Of course much more office work is done during the winter months than in the regular field season. Since more time is available in the winter for this work it is aimed to put aside that which does not call for immediate attention for its disposal in the winter. It is obvious that there is little or no time during the fire and improvement season for work on base maps and other mapping work and I believe this class of work is almost entirely done in the winter from data collected during the field season. In fact I think that mapping forms an important item in the program of the winter's work. During the summer season, if a Ranger keeps his supplies accounts straight and does the office work connected with his improvements as well as keep the time of temporary laborers, it seems about all that can reasonably be expected of him, especially if he has fires from time to time, which we nearly always do.

Systemization. When we come right down to it, what business - irrespective of its nature - is at all a success unless carried on under a proper system? It is the same with Ranger's office work. Lacking system there is bound to be more or less lost motion. The Ranger's files, for instance, what a source of trouble and annoyance they are if not arranged under a proper system. Who has not more or less fluently cussed his luck at not finding a certain paper that he is sure is the most important paper that ever was. He knows he received it and remembers just enough of its nature to know nothing definite about it, so must have it. Perhaps after a while he will find it buried in a heap of papers where it has been stuck away for a further perusal at some time before finally filing it away. Instructions have been issued for the proper arrangement of our filing cases and all who have not arranged their files in accordance, should get busy and do so and thereby be saved much trouble and annoyance. In a case that is pending, say a questionable trespass case or grazing adjustment in connection with which correspondence is coming in right along, I have found it a good scheme to prepare a special folder with case designation. This can be kept on the desk in the current business wire basket or can be filed. In any case reference is greatly facilitated and one does not have to sort out the required papers from a lot of others and run the risk of overlooking something important, especially as they may not be designated exactly alike. I think it worth while to mention that I think great care should be taken in filing to make sure that a paper is placed in its proper place. It is so easy to place one in the wrong folder if in a hurry or if the light is bad and if this is done the chances are that it is lost for good. It seems to me that a great aid to systemization

in the office is certainly not to pile one's desk, shelves, tables and top of filing cases to be littered up with a miscellaneous assortment of correspondence, books, forms, etc. A man has more incentive to get more work done with his work when he gets his office neat and tidy with his manuals and reference books on neat shelves and current work in wire baskets and labelled.

The Promise Card Box - Does It Work? Owing, I think, to the fact that the Ranger's office work is more or less intermittent, the promise card box does not seem to get the attention it deserves. Systematization in office work is not complete without it. If we are not in the habit of the promise card box, what takes its place? We know we all have certain things to do in the future and we know about when we want to do them, but when the time comes, can we remember just what it was we wanted to do? Of course not. It is impossible to carry everything in one's mind. Every day we think of something or the idea is suggested from a service publication, instructions, or a supervisor's letter. What do we do without the promise card box? We make notes, usually on scraps of paper, color no object. They are very likely to be scattered to the four winds as the days go by.

By faithfully attending to our promise card box and making it the first thing to do in the office every day, we are systemizing our work and not taking chances on overlooking matters that we have thought it worth while to make note of. Perhaps the supervisor asks for information and names a date a month away. The Ranger is possibly engaged on a new base map and is anxious to get it into the supervisor's office in time for data to be taken from it for the atlas. He does not want to stop work on his map, so he places a promise card in the box at the required date and if he does his duty by the box it will surely do its duty by him and will tell him, when the time comes, that the supervisor wants to know how many extra canteens and water bags you will need for the coming fire season and if you consider pickles a desirable item or a list of rations to feed four men three days. Yes, the promise card box works all right, only we must not expect it to do all the work.

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RANGERS' HEADQUARTERS.

Notes telephoned in by
District Ranger John T. Gray.

In constructing a Ranger's headquarters, the material to be used and the manner of construction should depend largely upon the locality in which the house is to be built. That is to say, the most available material should be considered with a view to economy, whether it be of logs or a frame building. A frame structure is preferable and it should be built with ample space to accomodate the Ranger's family, with an additional room for a visiting officer.

This can be most readily accomplished by erecting a building 1½ or 2 stories in height. The ground plan should provide for at least five rooms. At each Ranger's headquarters an office room should be provided. A room 12 x 12 ft. or 12 x 14 ft. would be ample. Such a room will give sufficient space for the files, book case, drafting table and desk, and any other necessary articles of furniture needed in connection therewith.

Tools and Tool Houses. Many of the tools, such as axes, shovels, and hoes are widely scattered during the field season and should at the close of the season be collected when practicable at the Ranger's headquarters and stored. By so doing such tools as may need repairs can be readily repaired. This work can be done very readily during the less busy season and the condition of all tools will be known at the beginning of the new field season. To make this possible, a tool house in each district is very essential to the proper handling of the different tools in use.

With a view to economy this can be properly built in connection with a workshop or some other similar building. A building, say 12 x 24 feet and divided into two rooms will usually be found large enough. One room 12 x 14 feet can be used as a workshop while the other room 12 x 10 feet can be supplied with shelves and will make an excellent store room and tool house.

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LESSONS AND RESULTS OF LAST YEAR'S PROTECTION EFFORTS.

Forest Supervisor W. A. Huestis.

There was a marked improvement in the fire record of the Trinity for the season of 1911. This was due largely, no doubt, to a more intensive system of organized fire protection.

A comparison of our annual fire reports for 1910 and 1911 shows that we had on the Trinity in 1910, 51 fires, costing $8,863, burning over 23,192 acres and destroying $27,874 worth of timber. This year there were 68 fires costing $848, burning over 1272 acres and destroying $988 worth of timber.

Our average fire in 1910 burned over 45.47 acres and in 1911, 18.7 acres. By omitting one large fire that burned over 960 acres, our average fire for 1911 would have been 4.65 acres. Any one of our small fires might have been as serious as this large one if they had not been promptly handled. This largest fire occurred at a place where considerable difficulty was experienced in getting to it and the delay involved placed it beyond control for the time being. One of the chief difficulties to be met with at present, is to make a fire organization reach over the remote and inaccessible places. An effective and safe fire plan means that fires must be discovered at once and promptly extinguished.

It is doubtful to my mind if an average of 5 acres for each fire, represents anything like safety on a Forest of even ordinary fire risk. Under some conditions a fire that reaches the size of 5 acres may become unmanageable. An average of one acre per fire with the occurrence of fires practically reduced to those from natural causes, is, I believe, eventually attainable on the Trinity.

Last season an effort was made to dovetail everything that could be of use into our fire plan. Circulars were gotten out to all users of the Forest, inviting special attention to the fire clauses in their permits, and asking that care be exercised in the use of fire. Personal letters were written to those persons of influence who were in a position to aid. Forest officers took every occasion to caution settlers and transients against carelessness with fire and the danger of burning up our woods.

Realizing that to obtain anything like satisfactory results the largest number of men possible should be placed in the field during the period of the greatest fire danger, our General Expense fund was stretched as far as possible for salaries. Twenty-one additional temporary men were employed July 1, and on August 1, our temporary field force

was 38 men. This number added to our regular force of 9 Rangers placed 47 men in the field during the period in which they were most needed. Our 5-months, 3-months, and 2-months men were selected locally and were for the most part men who had an interest in the country.

I believe, the employment of local men for short periods of service, is a decided advantage if the right men can be had, since it has a tendency to bring the residents in closer touch with the aims and purposes of the Forest Service. Favorable local sentiment is certainly a valuable asset in fire protection and this I have found we can more easily gain by employing local men for our fire protection force, regardless of the Civil Service list.

Our reconnaissance and improvement work was as far as possible made auxiliary to protection. Members of the reconnaissance party arrived at, took charge of, and extinguished one fire in particular that otherwise would undoubtedly have been a serious one. In another instance, a patrolman, with the assistance of two Forest Service trail workers, was barely able to control a fire that burned over 20 acres. This fire would have been highly destructive if it had not been for these temporary men, since there was no other help within a day's ride. Would it not be advisable in some cases, where settlers cannot be secured as fire fighters, to station several men together,- one or two always remaining at the patrol station within telephone call?

A comparison of our fire record for the last two years shows 17 per cent of our fires in 1910 were set by lightning, while nearly 30 per cent in 1911 were from the same cause. One electrical storm in August started 13 fires in one district within two hours. These were all handled,- the largest one burning over 10 acres before it was stopped. While these fires were all controlled, the District Ranger stated afterwards that he began to think there were large holes in our fire plan, the way things were "coming."

In another instance, about the middle of one afternoon, a young fellow, while hunting, wilfully set out four fires all within half a mile distance. These fires were reported almost simultaneously by several lookouts and were also seen by a number of patrol men. Four Forest officers arrived at the fires from different directions, and although they were set at an extremely dangerous period of the summer and in a hazardous place, they were all under control before dark. As soon as the fires were seen to be under control, one of the officers took up the trail of the hunter and with much difficulty followed him about three miles to his home, securing evidence which lead to his arrest and a plea of "guilty."

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To accomplish intensive fire protection with limited means in an undeveloped and more or less inaccessible region is certainly a problem that cannot be solved at once. The Trinity, like other Forests in District 5, is striving to overcome these adverse conditions.

Effort is made to combine all interests with fire protection. The telephone system is planned to eventually bring all important points within telephone communication. Patrol stations, lookouts, and their necessary equipment are selected and being furnished as fast as means will permit. As many men for patrolmen and lookouts will be employed each year as General Expense funds will provide for and only for such periods as they are actually needed. This I find is the most important feature of all,- to employ the largest number of men possible with the limited money available.

The organization of the men and the systematizing of their work was made as complete as possible. There are many little details that if properly taken into account help to swell the sum total of efficiency. The Trinity has a large field to cover yet, before a safe fire organization is in effect. However, material advancement has already been made in that direction and has resulted in a better fire record than formerly, largely due, no doubt, to more intensive methods.

A brief comparison of costs and results on the Trinity for the last two years may not be out of order.

The protection cost figures given for the seasons of 1910 and 1911, represent what it cost to carry the protection force of the Trinity for four months beginning June 1. This also includes the permanent Ranger force and Deputy Supervisor for that period, but does not include any other members of the Supervisor's office or the reconnaissance party. No improvement expense was included in this cost. I believe these figures obtained in this way are fairly representative for the Trinity.

By this calculation in 1910, $6593 was paid out in salaries for fire protection, which represents a cost of a little more than 1/3 of a cent per acre and slightly over 1/40 of 1 per cent of the value of the Government timber protected.

In 1911, $13,234 was spent in salaries for fire protection at a cost of slightly over 7.3 cents per acre and a trifle over 1/20 of 1 per cent of the value of the Government timber protected. This is taking the best estimate we have to date, on the Government timber which at the current stumpage rates on the Trinity gives a value of over 24 million dollars. The private timber valued at over seven million dollars, has not been included in this calculation

although it is receiving the same protection. The per acre figures are on the basis of the entire Forest.

The cost of suppressing fires and the value, at stumpage rates, of the timber lost for 1910, amounted to $34,737 - this after an outlay of $6593, in salaries for fire protection. Increasing the amount of protection salaries to $13,234 decreases the loss by fire in 1911 to $1834. That is, by increasing the protection salaries by about 100 per cent, the loss, which includes the cost of fire fighting and the value of the timber destroyed, was reduced by more than 1300 per cent.

However, this is only worked out on a basis of two years calculation, and may not represent a true proportion at all.

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PROTECTION.

By District Ranger
H. W. Brannan.

The subjects to be covered in Forest protection are:

1. Roads and trails.
2. Telephones.
3. Ranger Stations.
4. Lookout Stations.
5. Cooperation of Settlers.
6. Cooperation of Special Use and Free Use Permittees.

Roads and Trails are the most important link in the fire protection chain, if properly constructed, making all parts of the Forest easy of access.

In District No. 1 there should be a wagon road constructed so as to traverse the entire length of the Trinity River from Helena to Gray's Ranch, following close to its bed wherever possible. The trails should be constructed as to traverse the beds of all streams and all important ridges, so as to form a circuitous route and make it possible for the range rider to cover his entire district each day.

Telephones form the second link in the fire protection chain, and if properly equipped play a very important part when used in conjunction with roads and trails. First the main or trunk line should follow the road along the main streams, and spur lines should follow the most important trails, to be used by patrolmen. The lines should be

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equipped with portable phones only between ranger stations, and at lookout stations in all damp and frosty places the iron phone should be used, and in ranger stations and settlers' houses the 317-B telephone should be used.

Ranger stations are considered by me to be the third link in the fire protection chain. It is necessary that every Ranger and Guard should have comfortable headquarters by himself a small cabin and pasture or a small hayfield. A Forest officer should not be compelled to stop at a tavern or ranch house, for two reasons: first, there isn't the proper room for his work; second, he never has the same liberty in the places aforementioned as when in his own camp. Not knowing what moment he will be called to go to a fire, these camps should be chosen with a view of making the rides as short as possible and still cover the ground.

Lookout stations play a very important part and are considered by me to be the fourth link, or the one that binds the other three link's together in our fire protection chain and makes it strong; the two following links are only attachments and have to be adjusted with every change in the weather. These lookout stations to be properly equipped should each have a compass and have some person who understands how to use it, a good field glass, protractor, rule, table, and the best map the service has, and a dependable telephone. A fire won't be many hours old when it is seen by one of the lookouts. In connection with this there should be a good comfortable cabin, a wood shed, a pasture, and a good trail to the spring so that every possible moment will be devoted to "Art".

Cooperation of the settlers: In this district the settlers are so few in number, and too widely separated to be depended upon at all times. In or near each settlement there should be placed fire fighting tools in sufficient quantities so that in case of an emergency they can be drawn on, but only for the purpose for which they are intended. In very remote districts there should be emergency supplies of provisions in limited quantities, just enough to last until a supply can be obtained from other sources.

Cooperation by special use and free use permittees has never been tried out for the reason that a fire has never yet occurred in the vicinity of a special use or a free use applicant's holdings, but they have always indicated a readiness to give the requisite assistance.

Equipment: The shovel and axe head the list of fire fighting tools that have stood the test under all and all conditions.

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FIGHTING [illegible] FIRES.

By Assistant Ranger ... P. Box.

Handling of forest fires throughout the various forests and Districts is simply a matter of good judgment on the part of the Forest officer who has direct charge of the fire. The conditions are entirely different in different localities, and for fires perhaps not more than half a mile apart. For instance, we may have a fire on one side of a mountain in open timber with no underbrush, which would be an easy fire to subdue, while not more than half a mile on the other side a fire may start in a brushy steep country, the wind be unfavorable and it would be a hard fire to handle. Therefore, in my opinion, it is a hard problem to determine just what method would apply most satisfactorily in all cases. The method applied with success at one fire may prove a complete failure at another owing to conditions. Therefore, I believe a Ranger or Guard should not follow anyone's path or method marked out on paper, but upon arrival at a fire should be quick to size up the situation, the possibility of using natural lines of attack,- such as creeks, ridges, roads, trails, ditches, and should note the direction of the wind and protection of valuable stands of timber, etc.

It is a very important factor in handling fires for a Ranger to be very familiar with his District. He should know all trails, roads, fords along streams, crossings of ditches, camping grounds, springs, etc. Also something of the forest cover in the different creeks and on the different ridges throughout their Districts. Should a look-out or patrolman report a fire on a certain ridge or creek, the District Ranger should know instantly the nearest and best route to get to it, whether it is in a brush or timbered country, patented or government land, the nearest water, etc.

Each Ranger District should be well equipped with telephone lines and trails, should also have plenty of fire fighting tools, canteens, water bags, etc., located at different points throughout the District, also an emergency supply of provisions for quick action. Before the opening of the fire season the District Ranger should make arrangements with local stores if such are available, and if not the nearest base of supplies, to furnish supplies in case of fires, and leave standing orders with them with the understanding that these will be filled immediately upon notice by telephone or messenger. These orders should consist of good substantial food stuffs and hay and grain. A good plan is to have more than one order at each store; say order No. 1 would consist of rations for six men and two horses for three days: order No. 2 rations for fifteen men and four horses five days. Also he should know where he can hire wagons and teams, saddle and pack animals, and in case it is impossible for the

regular store team to deliver the goods, he will know where he can hire means of transportation without delay. Also should keep posted on places where men are employed, such as mines, logging camps, sawmills and large ranches; the number at each place should be noted to enable him to secure help as quickly as possible.

We have all kinds of fires to battle with: some may be brush fires on flat or steep country; others may be fires in open timber either on flat or steep country, and oftimes fires occur in both brush and timber, and owing to the difference of opinion in men the method that I may think was the boss, may not suit the rest of the boys at all, but I shall now endeavor to state what I think is the best method of handling fires, taking open timber on flat or rolling ground first.

If possible to get near a fire by wagon road, transportation of men, tools and supplies should be by wagon, otherwise by saddle or pack animals: however, it is always necessary to have a horse or two at a fire for use in carrying water and supplies around the fire to the men. Upon arrival at a fire no time should be lost in selecting a fancy camping place: anywhere where water is handy is good. I think it is better to camp close to the fire and pack water than to camp at water and carry both water and grub to the fire, even if it keeps a man busy, for men must have plenty of water when fighting fires. The Ranger in charge should be firm in giving orders, but must not show authority too much to obtain good service from men. Best tools for fighting fires are a matter of opinion of the Ranger: in mine I'll take the shovel and axe; if there is no brush or squaw carpet at all, the rake is very good, but as a tool for all kinds of fires I do not approve of it. Hoes are of very little use in my estimation. The shovel should be a light, full sized blade, with a good crook to the handle. Axe should be a single bit and should not weigh over 3½ lbs. I prefer the 2½ gallon South African water bag to the canteen for carrying water. Should always have the 5 gallon bags for carrying water on horses to camp where that is necessary and around the fire line to the men.

Furnish every man with a shovel and a bunch of matches, and alternate with axes and waterbags, so that there will be one axe and one waterbag to each two men. The topography of the country, direction and rate the wind is blowing, determine the best place to tackle the fire. Always tackle the fire on the leeward side first. If in open, flat country and wind is moderate, begin your fire line at one corner of the fire, and lining your men out, taking the lead yourself, begin far enough away to give your back fire time to burn over a little space before the main fire arrives, and if the wind is carrying your fire at a great speed, do not attempt to fight it face to face but be sure and get a safe distance ahead to begin your line of

attack. Fire lines should be made by scraping the ground floor cleanly to the mineral earth, and at the least calculation should be made 2½ or 3 feet wide. Some disputes have arisen over which way is proper to scrape the debris, toward or away from the fire. I favor scraping it away. Detail one man to back fire and watch to see that the back fire does not jump the line. The regular Forest Service torch cotton out for use in back firing, is in my judgment a worthless piece of property, therefore I would furnish in lieu a good shovel and lots of matches to the man detailed to back fire. In making fire lines avoid as much as possible leaving dead trees inside your fire line, for when they once get on fire and the wind comes up, fire will be scattered all over the country. Care should also be taken to sacrifice the least amount of young growth. Should you strike brush, put the axemen ahead, picking out the most open places to put your line. After the fire is headed on the leeward side, split your crew, detailing your best man to take charge of one side, and remain on the other yourself and begin firing your fire up. Generally you can make your lines fairly close on the sides, and after you get around on the windward side, you can often put out the fire by making but small lines or using dirt. If the fire is small and you have only a few men, detail one to go to camp, cook up some grub, fill some waterbags, saddle up the horses and bring it around the fire to the men. Sleeping at a fire is out of the question, for night is the best time to fight fire and we don't have time in the day time for sleep. However, if a fire cannot be subdued in one day and one night, you must get more men on the ground so that one crew can rest while the others fight.

I think that the best method of handling brush fires on a flat country is in a like manner to the open timber fire, only it is necessary to have more axemen and less shovel men. A good wide line should be cut, for generally the blaze from a brush fire, forced by a little wind, will extend ahead several feet. Back firing is good to burn up the debris on the ground, but as it is impossible to set the green brush on fire I believe it pays to cut a good wide fire line and not do so much backfiring, for the main fire will sweep over it anyway if the wind is blowing.

In fighting fires of any kind on steep country, unless they are very small and tackled in their infancy, it has been proven that the best method is to make your line of attack from some natural place. Generally the fire causing its own draught, if not driven by wind, will sweep up the hill at great speed, but upon reaching the top of the ridge will slow down; therefore, the best place to attack is the top. Begin the same as on open timber fire, at a point where you are sure the main fire will not get in behind you and put a line along the top and backfire. I prefer a little over the top on the opposite side of the ridge from fire to enable

your back fire to have a better show to burn, and in addition you are out of the smoke from the main fire more than if you were on top. Care should be taken not to get so far over that chunks and fire balls will roll, for they are simply a terror to Rangers when they roll down over the fire line setting a string of new fires. After you have the fire headed on top of the ridge or leeward side, split your crew, putting the best man to take charge, as I stated in describing the open timber fires, and each crew take down a side making fire line and back firing. The best scheme is to take down a gulch or ridge if they are available, even if you have to sacrifice some timber in doing so. Follow down each side until you get below the fire and then cut across under it. However, if a gulch or ridge is not available, make your line straight as possible, for if you go working in and out under the fire stuff will keep rolling across your line and give a lot of trouble. Furnish water and supplies the same as described in fighting the open timber fire.

I believe in handling any kind of fires Rangers should always, when possible, hire men who have interests in the country or men who are working in logging camps, mines, sawmills, or like places, for generally this class of men are not lazy and will give better satisfaction. Should avoid hiring floating class or fellows who are always hanging around towns.

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PATROL VS. LOOKOUT.

By District Ranger J. W. Patton.

In the summer of 1908 I was given the small task of keeping the fire out of some 200,000 acres of forest and brush known as District No. 3, Trinity National Forest. About August 1, 1908, I had my camp a short distance from the top of Dubakella Lookout. It had occurred to me that about all a man would have to do was to sit up there and when he saw a fire go over and put it out. This is what I could see from the lookout: the canyon would be level full of smoke; about 10 or 11 o'clock the wind would come up and the smoke would start to raise; about 2 or 3 o'clock in the afternoon the old smoke would be nearly all gone and the country would be rapidly filling up with new smoke, but it was very seldom that I could tell whether it was new smoke coming from a fire or whether it was the old smoke coming back to camp. By 5 or 6 o'clock the country would be back to about the same that it was in the morning, except that the smoke would be higher and would obstruct the view even to the highest peaks, while in the morning the smoke was settled in the canyons leaving the higher peaks and ridges open to view.

After studying this condition for a few days it seemed to me that about the only way for a man to tell if there was a fire over in that canyon full of smoke was to go over there and see, so acting on this theory I started out. I would get up on some high point, size up the country, and go where the smoke looked the thickest. Sometimes I would find a fire, and sometimes just drift smoke.

In the latter part of August this condition changed. The smoke cleared away, and then I went up on the lookout it looked as if I could see a man with a cigar anywhere on the district, so I decided that it was not necessary to go around and look in every canyon, as there could not possibly be a fire there without it being seen from the lookout. The lesson learned during this season was that the way to find a small fire during the dangerous fire season when the country is full of smoke is by patrol.

During 1907 I found conditions the same as in 1906. During the most dangerous fire season nothing could be accomplished from the lookout, while at other times the lookout was a great saving of riding.

In 1908 the same plan was followed. In 1909 I had one Forest Guard. We built a telephone line up to the lookout station and the Guard was stationed up there as lookout. For a week or ten days he could see everything that happened. Finally one day he called up and said it was so smoky on the east side of the summit around Harrison Gulch that he could not tell whether there was a fire over there or not. I told him I would go over in there and see. The next day he reported that the South Fork country and Harrison were both so full of smoke that he could not see anything down there, so the only thing to do was for him to go one place and look and for me to go to the other. This same thing kept up for about two or three weeks, finally conditions changed and we dropped back to the lookout idea.

During 1910 I had two Forest Guards. This was an unusual season. It took no effort on the part of either lookout or patrol to discover a fire as the air was light and dry both night and day and a high wind blew most of the time. The smoke from a small fire would show up against the sky like the smoke from an old steamer out on the ocean on a clear day. The smoke at times would rise up to an elevation of 6000-7000 feet and drift off across the country in a body, leaving the country under it perfectly clear. From the big fire it would go up in great clouds, each one being a little higher than the one before it; when the wind would slack a little these great clouds of smoke would settle to the ground and rise again with the next puff of wind. At no time during the dangerous fire season [illegible]

heavy enough to hold this smoke in the canyons in the form of dead drift smoke. This was an ideal season for a lookout to make a reputation seeing fires as the smoke was constantly on the move, and I am not quite sure but that the records made by lookout during this season is responsible for a great deal of the favor given lookouts by a great many Forest officers, which I consider a very unfortunate thing, as I have learned by experience that a lookout is absolutely helpless a good part of the time during the most dangerous fire season, especially just after an electric storm when the air is full of haze and smoke and sometimes fog, which makes it impossible for him to locate small fires in the heavy timber and canyons.

During 1911 I had seven men besides myself. Five of these men were given established routes to patrol, the other two men and myself followed practically the same idea as in former years. One was stationed on lookout, the other two going where the smoke looked the thickest, as I did not see my way clear to get around the established facts as learned by experience in former years,- that the only way to find a fire in a canyon full of smoke is to go in there. A man can not do this by riding a route designated to him by someone else, neither can he do it from a lookout. Just following an electric storm in July, we had an ideal chance to try out our ideas, as the air was very heavy and the canyons filled up with smoke almost immediately after the fog, caused by the storm, had risen. The lookout was counted out from the start. The two patrol men following up the old plan were the first men to five fires. The five patrol men on the new plan were the first men to four fires. Seven fires that had burnt only the tree the lightning struck were not seen by either patrol men or lookout until they had gone out themselves. Later on in the season there were times when the whole plan seemed to hinge on the lookout.

The lessons learned for the past six years are: The patrol man's district joining on the Forest boundary should be smaller than those joining other Ranger Districts. Had only two last year - these should be divided into three, and another regular patrol man added to the force. Add one more man to the force of last year, and I believe they could handle the fire situation any ordinary season.

It was a great advantage to have the force divided into regular patrol men, lookout, and independent patrol men, as the independent patrol shifted its weight whichever way the circumstances warranted, doubling the force and sometimes trebling it, in that locality, leaving the balance of the District still guarded by patrol and lookout.

In good clear weather the lookout relieves the independent patrol men and they can busy themselves at other work.

If the lookout's supplies got low, the nearest patrol man can spend the day on lookout so that the lookout can come down. Very few people realize how good it feels to come down from a high peak after having to sit up there on a rock for a month.

Don't depend on the lookout to see through a mountain of rock, or fog or smoke. Sometimes haze caused from the summer heat will render a lookout practically useless in discovering small fires. This has occurred often over Hayfork valley.

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WHAT SHOULD THE EQUIPMENT OF A PATROL MAN CONSIST OF? HOW MAY HIS EFFICIENCY BE INCREASED?

By Assistant Ranger Edward Elmgren.

In a patrolman's outfit a good bed is of first importance so he can make his bed wherever night overtakes him, eliminating a great deal of needless travel and the necessity of returning to headquarters over night. Viewed from the standpoint of efficiency, one cannot afford to economizeon this part of the outfit, since to keep always at the highest point of health, strength and efficiency depends in a great measure to a good night's rest.

Compactness and light weight are important. This applies equally to other parts of the equipment, such as tent, food, cooking utensils and other accessories.

The selection of food is a serious problem. Too much means discomfort and fatigue - too little means hunger and perhaps privation. A good deal of labor can be saved by not carrying what you won't use. My idea is to travel light but right. There is a deal of difference in these woods - just as much as between roughing it versus smoothing it.

It would seem that the Rangers under present conditions are not supposed to live in a very comfortable atmosphere: To quote the words of Stewart Edward White in one of his magazine articles:

"The summer is their busy season. All the manifold business of the Forest is pacing its swiftest. There is fire fighting sometimes sixty weary hours at a stretch.

"Each year brings its crop of new recruits. The newcomer generally cherishes a hazy idea that a Ranger's

chief duty is to ride abroad pleasantly on patrols, to count rings in tree stumps and to see that everybody obeys regulations. Ten to one he is set at stretching barbed wire, or splitting cedar posts or digging holes, or handling large jagged rocks. When his hands are all cut and skinned, his muscles sore and his back tired, he is called to ride a hasty six hours to a large hot fire on a side hill, There he works for two days in a broiling sun, over broiling coals, with little water and perhaps no food. He gets faint, finally sick. He tells the head Ranger these painful facts, and is surprised to discover that he is expected to go ahead anyway. Other men are working methodically, as a matter of course, when they are so dry that their tongues swell, and so tired that they stagger.

"When the fire is corralled, all ride back home again. Our new Ranger goes to bed to sleep it off. After a few hours he is awakened and told of another fire in another direction - a bigger fire than the last. He is filled with consternation. 'We're dead!' he cries, 'We can't do anything more!' 'We've got to,' is the reply.

"Of course this is the rough end, but the rough end of rangering presents itself oftener than the smooth middle."

It appears to me that when such occasions arise as described by Mr. White, a great deal of suffering and hardship could be avoided by being always properly prepared for just such emergencies in the way of food, water and other necessities before starting for the fire. And then, unless the danger is extremely great, work by reliefs and sleep and eat the same way - that is, spell each other. I cannot see where efficiency is increased by working under full pressure, without food, water and an occasional rest, until a state of exhaustion is reached. The maximum of efficiency is not obtained when a patrolman or fire fighter is from any cause below par in his physique; he breaks down under influences which otherwise would have but little affect on him. For that reason to keep always in good physical condition by attention to the person, the shelter, clothing and diet, and the avoidance of unnecessary exposures and fatigues becomes of prime importance.

There are, of course, times when prolonged exertion becomes inevitable, but even then cool, deliberate action, with occasional rests and something to eat before you reach the point where you are all in, I think the proper course to pursue.

Foresight and preparedness are the main requisites. [illegible] it is very good idea, even on short trips, that one after be unnecessary it [illegible] time of starting, to take a couple or more 'in' or 'for' along, [illegible] never tell what delays may occur. Pilot bread or "hard tack" and chocolate in tablet form are excellent in emergencies when nothing else is available. Wishing you a [illegible] be one crowded by an enjoyed mountain climbers to be the very best, for reviving a person 'all in.'

[illegible] efficiency cannot be accepted without being properly equipped and prepared for the work in hand, a packman handles his fire fighting implements - axe, shovel, etc., and possibly a machette, this I consider an excellent tool for cutting brush, - should carry with him his slicker, his food, his every necessity of living, so as to be independent of outside sources for all time being. Every article essential to be carried should be reduced to a size, weight and shape which makes it an integral portion of an easily carried outfit.

It goes without saying that he should be well mounted. His best obtainable should be none too good. I think the regulation cavalry horse about fills the bill. I want to see a gelding of handy color, sound and well bred, gentle under the saddle, free from vicious habits, with free and prompt action at walk, trot or gallop, without ill wish or fear, of a kind disposition and with good mouth and wait. His height must be between fifteen hands and a quarter and fifteen hands. His weight between 950 and 1100 pounds. The prescribed age is from 4 to 8 years, but animals under 5 years are seldom accepted, and the best authorities recommend a minimum age of 6 years, when hard field service is anticipated. Active, short-coupled, short-legged, "blocky" mules, weighing from 900 to 1000 pounds are considered the best for pack animals.

Under favorable conditions an animal can carry a load of about 30 per cent of his own weight. The load should not be much in excess of 300 pounds, when long or hard trips are to be made. It has been found that well raised horses cannot stand the work on mountain trails as well as those raised in the mountains.

Next in importance to a good horse is the riding equipment. The kind and style of saddle to be used, of course, is a matter of personal preference. It is essential, however, whether it be an army McClellan or the old horn type of saddle. The former being considered by many to be [illegible] than

of the old type saddle, particularly the heavier models, one of which is about as easy riding as a sawbuck, and just as restful. The old stand by, strong and substantial in the make-up throughout, light and easy on the animal's back. Our Uncle Sam is a great animal lover and his boys must have the very best. For me, the Whelen saddle is preferred by many, and for our work - if a good one - I think it is the best. Once in mountain travel it will stay placed better and not crawl all over a horse's back.

The pack is a most important item to consider, for an ill fitting pack is a source of great torment to a mule, and when it is a great measure it spends his ability to perform his work with the least amount of fatigue, while a hard riding saddle is a perpetual source of discomfort. But the contour of a saddle is a question entirely separate from the nature of its bearing surface,- that portion of the saddle tree coming in direct contact with the horse's back: this must be right. Everything to fit the animal's back, nay, as the saying goes, even to the root, will make sore backs almost impossible.

For placing next to the horse's back, (this applies equally to the pack animal,) I know of nothing better than the hair saddle cloth: the material - pure horse's hair - renders it perfectly porous and cooling. The perspiration is at once evaporated and it thus prevented from collecting on the horse's back. They do not become hard and stiff, but preserve their softness and flexibility, both of which are conditions so essential to a saddle cloth. If in need of cleaning, dip in to a solution of water and borax, allowing it to run through the hair, is all that is required.

Over this cloth, before placing either pack or riding saddle, I would place an army saddle blanket, or one similar in size, folded into six thicknesses according to U. S. cavalry regulations. Since this blanket owing to the hair cloth is not permitted to come in direct contact with the animal's back, it is at all times free from perspiration, making it possible to utilize both these blankets for bed blankets.

The pack outfit that seems to be at the most practical all around rig (for our work) is: The Humboldt pack saddle with aparejos, ham cover, and cargo cover complete. With this rig one can pack almost anything - telephone wire, etc., - without galling or injuring the animal's back, which cannot be said for some of the other styles. I also believe the U. S. Government Diamond hitch as thrown by ... Franklin of Biscuit, Montana, the best yet. The inventor giving a number of reasons why this is the best way, namely;

First: The loose spare end remains in one knot out of the snow. Second: The loose spare end is not thrown twice over the cayuse. Third: The wise guy on the off side never gets hold of the loose end to play with, but is tossed the two hights, with directions to put first hight in back, second hight over and under the box. Fourth: This way is not so easily forgotten as the old Government style, in which nearly everyone in time forgets the third move.

The ordinary canvas alforjas are most excellent receptacles for carrying sacks of flour, dry groceries, or articles which will not be injured, when subject to the lash rope or blows from rocks by the trail, but they are very hard on tinware or cooking utensils, not to mention canned goods or glassware. Better results can be obtained by using grub boxes, so to speak, that fit into the alforjas. The cover of the box to consist of two widths hinged together. By opening these covers back on to a light poplar supporting bar carried in the case, a most satisfactory table approximately 21 inches wide by 36 inches long is obtained, for which an oil cloth can be carried. In one box should be carried the cooking utensils, which should all telescope together compactly, and such articles as are always required in preparing and disposing of a meal, while in the other box are carried provisions in bulk, the canned goods, etc., to be drawn upon but occasionally.

Whether afoot or with animals, rice, beans and dried fruit, flour, salt, sugar, coffee, tea and bacon are the staples of camp groceries and are essential. All dry provisions should be carried in strong sacks, and not in paper bags or boxes - these sacks should be large and deep so they may be closed by jerking a knot in the sack itself.

On a trip of any duration the following articles should be included in the bedding roll: A spare flannel shirt, undershirt, pair of drawers and handkerchief, with two pairs of socks, a first aid packet, needle book containing thread and a few safety pins and spare buttons, match box, towel, soap, pocket comb and mirror; shoes and socks should be carefully selected to fit. Shoes that have already been broken in by several days usage are best, well hob nailed, of course. Some provision for mending saddles and straps might be made as well. A few rivets, a sewing device with heavy thread, some buckskin or rawhide, etc. With these one can do a pretty good job of repairing on a broken riding or pack rig. A folding lantern and a few candles is a handy contrivance and will often be used, especially when compelled to travel by night. A canteen which can be carried on the person or tied on the saddle should never be omitted, as well as a pommel slicker, not only as a protection from an occasional rainstorm, but can also be utilized as a damp proof flooring for the bed at night.

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Some device to guard the face from mosquitos should find a place in the pack, for many wet meadows in the mountains are great breeding places for these pests.

I also think it advisable to carry a shelter canvas of some kind. Ordinary tents of various patterns, such as the wedge or common tent, the Sibley tent, or the conical wall tent, are of no account in active field service, or under any condition of travel where the size and weight of what one carries must be considered.

For a maximum of convenience with minimum of weight and bulk, I know of nothing better than the George shelter tent manufactured by Gordon & Ferguson, St. Paul, Minnesota. First, the absolute simplicity of the tent is the test of its perfection. Second, lightness of weight, only weighing about five pounds. It is a perfect shelter, impervious to rain and wind, about 7 x 7 feet on the ground and 7 feet in height, capable of sleeping three or even four. Third, lies perfectly flat without a fold, and for that reason makes an excellent cargo cover. Fourth, simplicity of erecting: The two rear corners of the tent are pegged down, the sides carried at right angles to the rear line, pulled taut and pegged. The lifting rope is thrown over a convenient limb or pole, the peak is pulled up snugly and the tent is pitched. Fifth, no matter how strongly the wind blows, one man can put up the tent unassisted. Sixth, the front of the tent is perpendicular. It will not let in rain, but it will take in all the warmth of the camp fire when it is needed.

The most practical bed I know of, for a patrol man, or anyone else, for that matter, who from necessity or choice must sleep in the open, is the Comfort Sleeping Pocket manufactured by the Metropolitan Air Goods Company, Reading, Massachusetts. Weight 14 pounds. It can, if necessary, be strapped to the back of the saddle. When deflated and rolled makes a bundle no larger than a pair of blankets. Actual tests have proven it possible for most people to sleep comfortably in the open in a Comfort Sleeping Pocket in mild weather without blankets. The price may be considered prohibitive by many, but from actual experience I consider it the most indispensable part of my outfft.

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TRAILS AND PASTURES.

By District Ranger
Frank A. Graham.

Although most of the Forest is covered by trails, or at least has a way of "getting there," as you might call it, most all of the so-called trails were constructed by prospectors and campers and little or no attention was given to grades, as the most available way was considered the best. But the time has arrived when better trails on easier grades are needed.

During the fire season some progress is being made each year toward making new trails and brushing out the old ones. In the fall, after the fire danger is over, the Guards can be gotten together and some new trails built.

Under no conditions should a trail be constructed without making first a survey with some instrument, laying off trail grades by the eye should be discouraged, since an even grade cannot be made with the eye in a rough or broken country. I believe that the Abney Hand Level is the proper instrument to use in surveying trails, since the work can be done quickly, economically and accurately. In ordinary country three men can make three miles or preliminary surveying per day. The maximum grade of any trail should not be over 15 per cent. In some instances, however, it is better to make it 20 per cent for a short distance rather than to make switch backs, as they are continually filling up.

In most cases it is better to survey down hill in laying off a trail, especially if you are going to survey from the top of a mountain to a creek and follow the stream, but to build a trail from a saddle in a ridge to the top of a mountain, the survey must start from the saddle and work towards the top of the mountain. In making the preliminary survey, look the country over carefully and take notice of all the necessary points to be considered, such as the crossing of streams and getting around rock cliffs, as a small oversight in the survey will often cause a great deal of extra work and expense. After the preliminary survey is made and the objective points are located, then figure out what the grade will have to be in order to connect these points. This can be done by guessing or pacing the distance and taking the approximate difference in elevation, as the approximate distance will usually bring the survey very close. Under no circumstances should a trail grade go down hill in going up a mountain as this will not only cause extra climbing but unnecessary distance as well.

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In brushing out trails, all brush should be cut close to the ground and wide enough so that when there is a foot of snow the brush will not overlap the trail. The width to which a trail should be brushed out all depends on the kind and height of the brush. All logs should be cut at least seven feet. No brushing should be done on horseback as the brush falls in the trail to be piled some other time: besides, brush cut up high will grow up in one year so that it is almost impossible to tell that there had ever been any brushing done. The best tools to use in trail construction are the axe, mattock, pick, shovel and plow. For brushing out, a light camp axe is the best. A brush hook is good in very small brush and vines. The pick and mattock should be heavy and strong and should weigh at least 5 pounds each. In purchasing mattocks get welded eyes in preference to punch eyed mattocks. The use of light picks and mattocks in trail construction should be discouraged, as digging in hard with a light pick or mattock is like driving a spike with a tack hammer - you do a lot of work and accomplish nothing.

The plow should be a 10-inch sidehill plow so that the plowing can be done down hill. On the Hawkins Creek trail, J. B. Patterson used a plow and one mule, and in open country three men averaged 80 rods of two-foot trail per day along a steep side hill.

A six-foot crosscut saw is handy to have along and can be easily packed by bending it over the top of the pack and tieing the ends to the cinch rings. This looks as if it would bend the saw and injure it, but when the ends are unfastened it will be as straight as it was when put on the pack.

In making trails it is not necessary to do a great deal of grading unless there is plenty of time and money for it, unless the slope is very steep and rough. It is necessary to grade off the bad places so that a saddle horse can be ridden along the survey. On most trails along sidehills I cut the brush and logs out and if it is a very steep slope I grade a trail 12 inches wide and in some places just mark the grade with a mattock so that it can be followed. In going over the trail a year afterwards it will be hard to tell whether it was graded or tramped. Two years ago two Guards and myself surveyed a trail of 3 miles and brushed it out. On about half of it we got all the bad ground graded off, the other half was left untouched except that the logs were cut out, but as it was an easy grade and cut off one-half the distance, we travelled it the following season without doing anymore work on it. Last spring I had four days work done on this trail and at the present time it is equal to many of the graded trails, so there is nothing

to fill in from the banks and cause the stock to walk on the outer edge. To build a trail in this manner it is better to have the work done by temporary labor than by contract. Two men will, under ordinary conditions, average from 40 to 60 rods of trail per day.

Better trails and more of them are needed in this District, and it is my intention to get as much of this done by the protective force as possible, as we may not only get the trails, but it assists in the efficiency of the patrol system as well.

FENCING. Pastures are needed in preference to any other improvement except telephone lines. Every Ranger Station should have a pasture large enough for the stock actually needed in patrol and administrative work. If good sites are selected pastures of an area of 20 acres are sufficient. It is much better to have two 20-acre pastures 10 miles apart than half as many 40-acre pastures and have them 20 miles apart.

All pastures should be close to the station or camp, as time spent in getting horses is wasted. The station should, whenever possible, be at the upper side of the pasture, as it is much easier to go down hill and get a horse and ride him up than to climb up hill after him and go back down after the saddle; besides it is almost always necessary in patrol work to be on top of the mountain early in the morning.

On account of the snow, I believe that on high elevations a No. 10 smooth wire is better than barbed wire. The construction of a fence has much to do with its durability as the material of which it is made. I have a barbed wire fence around the Groves Prairie Ranger Station that was constructed three years ago and there have never been but two days of repair work done on it. The elevation of this station is approximately 4700 feet and it is in the timber where the snow falls 8 to 12 feet deep every winter and usually lies until May 1. The wire in this fence is fastened to trees and posts 16 feet apart and has three 1 x 4 stays between the posts, leaving a space of 4 feet between stays. In using trees to fasten wire to, great care should be taken not to use any very small or leaning trees that will lop over or bend down when loaded with snow, as it will either pull slack in the wire or break it. A fence with the wire hanging loose is worse than no fence at all. No fence should be less than 54 inches high, nor the spacing between the wires more than 10 inches for smooth wire or 12 inches for barbed wire. Posts should not be over 16 feet apart, and if the timber is handy place them only 10 feet apart. Stays can

either be split or small poles 1½ inches in diameter may be used, these may either be wired on with No. 14 wire or stapled on. In case staples are used, they should not be driven with the points straight up and down with the grain of the wood, but should be driven in at right angles to the grain of the post since they hold so much better and will not fall out. When it can be avoided, do not set a post so that the wire will come on the vertical grain side of the timber.

I believe that outsiders, especially stock owners, should be allowed to use Ranger Station pastures when there is sufficient feed to allow it, but I do not believe that this policy should be encouraged.

Trails and pastures, as well as other improvements, are essential on every Forest, but since the appropriations are small, only a small amount of money can be used on these projects, making it, therefore, necessary for most of this work to be done by the men under appointment. Before the construction of any improvement there are three things to be considered: 1. The value to the Forest Service, 2. Cost of construction, 3. Comparison of its value to the Forest Service as against other improvements needed in the District.

There is a vast difference between an improvement of probable value to the Forest and one that is of immediate value; just as in making any other purchase or investment. A trail or station that is used two or three times a year should not be given the same consideration as one that is used during the entire fire season.

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RELATION OF PROTECTIVE FORCE TO IMPROVEMENT WORK.

By District Ranger C. A. Chamberlain.

Just to what extent the protective force may be used on improvement work, without impairing our fire protection, can best be determined by a careful study of each Ranger District. Probably no two districts can be found on the Trinity where conditions are exactly alike, consequently no hard and fast rule governing a combined protection and improvement working plan can be made, which will apply to all its seven districts alike. I believe, however, that I have a plan which can be successfully carried out in District 7 whereby we will be able to give the Forest ample protection, and at the same time turn off a creditable amount of improvement work with the protective force.

Before giving my plan, I wish to give a little of the District's early history. District 7 lies within the mineral belt. Much of its surface consists of rolling hills covered with a heavy stand of timber, and in many places dense stands of reproduction. During the early mining days most of its surface was prospected for mineral. Many trails were brushed out, and in some places grade work was done, to get supplies into the various gulches where gold was found. The most of this work was done in the sixties and seventies, and as fast as a gulch was mined out it was abandoned, and the trail allowed to grow up to brush. The result is that today these old trails are in sore need of repair. With our present small allotments for improvement work, there is little chance that more than a small percentage of them will be repaired in the near future, unless we hit upon some plan whereby we will be able to do the work with the protective force.

My plan is as follows: Place a man on Granite Peak with a comfortable cabin, a supply of food, a cooking stove and fuel. Install the most substantial telephone equipment to be procured; give him a map of the District, a compass, and a powerful field glass.

District 7 is divided into four natural fire patrol units, known as the Buckeye Mountain, Trinity Mountain, East Fork and the Stuarts Fork. Upon each of the first three units I would build a comfortable headquarters for Guards, near a supply of good water, if possible, and upon the tops of the main ridges I would furnish a stove to patrolmen but no food or provisions. I would then build telephone lines the entire length of the most important patrol routes, but

would not install tele hone instruments along them. I would furnish each patrolman a portable telephone instrument, and each patrol unit a weatherproof telephone instrument, and keep a supply of fire fighting tools at each Guard's headquarters. I would place two Guards upon each of the first three named units, and keep an Assistant Ranger on the last with headquarters at the District Ranger's, where another supply of tools, and an emergency supply of food stuffs should be kept.

I would have a map of each fire patrol unit, constructed in such a manner that I would be able by the use of pins to keep a check on my men's movements.

For instance, if my men on Trinity Mountain were building a trail from the ridge between Big and Little Papoose Creeks, I would place two pins on that ridge on the map, with a miniature flag bearing the words "Trail Work" and if my men on Buckeye Mountain were on patrol, I would check their movements with pins, and flags bearing the words "Going" or "Return", as the case might be.

By having my men report at regular places, and at regular intervals, and by placing a pin to indicate their position and the direction of their travel, I would be able to tell at any hour of the day by looking at my map, just where my men were, and where to look for them in case of a fire. With men, tools and supplies in place, I would proceed as follows: Have all reports made to District Ranger's headquarters. Have my lookout man report each morning the condition of the atmosphere - whether clear or smoky - and require all Guards to report each morning by telephone for orders. If the lookout could see the District clearly, I would have my Guards prepare to build or brush out trails. I would have them take out their weatherproof telephone instrument to their place of work, and by using insulated copper wire connect with the main line at the nearest point, and if necessary use the same kind of wire for a ground, and if they were doing grade work keep the instrument near enough to hear the bell. If they were brushing out trail, I would require one of them to walk to the telephone every hour and report to District Ranger's headquarters. On clear days when the Guards were doing trail work, I would have the Assistant Ranger visit one of the units to lay out new work, and to keep them working in the right places, or remain at headquarters while I made trips for that purpose. During such days as the lookout could not see the District clearly, I would have every man go out on patrol with instructions to report hourly. With my patrol telephone lines, and the portable instruments mentioned before, this would be possible. Should a fire be sighted over on Trinity Mountain I would not allow the Buckeye and East Fork [illegible] to rush over there, leaving their country alone, but I would

require each man as fast as he saw the smoke to report at the nearest point, and remain there until he received orders what to do. I would endeavor to make such preparations before the opening of the fire season, that my men would know at once where to look for men, tools and supplies, and how to get them to the fire by the quickest and most convenient route.

The costs and results of this method I figure for a six months-period as follows:

One six months Guard at $75 per month, $450, May 1 to October 31, total number of working days, Sundays and holidays not included, 155. Out of that time we will give him 75 days for patrol and fighting fires, and 80 days on improvement work.

One four months Guard at $75 per month, $300, July 1 to October 31, total number of days 104. 50 days on patrol and fighting fire, 54 days on improvement work.

Two three months men at $75 per month, $450, July 1 to September 30, total number of work days 154. 74 days on patrol and fighting fires, 80 days on improvement work.

Two two months men at $75 per month, $300, August 1 to September 30, total number of work days 100. 50 days on patrol and fighting fires, 50 days on improvement work.

One three and a half months man for lookout, at $75 per month, $262.50

Total for salaries for the season - - - - - - - $1762.50
Total number of days on protective work - - 274
Total number of days on improvement work- - 331

At the usual rate of wages paid for temporary labor, which is $2 per day, this 331 days on improvement work represents $662. Our estimate on the cost of the repair of most of our old trails is around $25 per mile, but suppose it would amount to $50 per mile, we would, under my plan, be able to repair about 17 miles of trail during any one season, and at the same time be maintaining a protective force which should be equal to any ordinary emergency, and bring us through with a fire record showing nothing larger than a Class B fire. On the other hand, as a matter of comparison, I wish to call your attention to our present system. Certain allotments for improvement work are made, which work we let out by contract or hire done by the day, and we are able to maintain but a small protective force during a much too short season.

Our requisition has asked for money enough for the fiscal year 1916, to give district 7 the following amounts: $[illegible] for one Assistant Ranger for a period of five months, June 1 to October 31.

Under our present system we all know that it will be impossible to use our protective force one half the time on improvement work, but to a year fair I shall figure the time on improvement work in that way.

Our first map this has 122 working days before him. Let us allow 30 days for patrol, and 30 days for improvement work.

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$240 for two Guards three months, July 1 to September 30. One of these for a look out. The other may work 92 days. We will allow 37 days for fire patrol and fighting fires: 40 days for improvements.

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$240 for one Guard two months, August and September, 61 working days, 25 days on patrol and fighting fires, 36 days on improvement work.

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This gives us a total of 142 days on improvement work by the protective force. In addition to this we asked for $400 for trail work, which represents 133 and 1/3 days at $3 per day, giving us a grand total of 346-1/3 days on improvement work, and 122 days spent in protection by a force of three men. The total cost for the season will be $1458.33 for five months, as against $1783.50 for six men for a season of six months, under the new plan. There is a difference of $304.17 in favor of the old system, but if you will consider the vast difference in the protection that we will be able to give the forest, and the fact that one forest fire might cost us more than $1000 for supplies and men, to say nothing of the loss in burned timber and reproduction, I think that you will all join me in saying, let us have more telephone lines, more lookouts and men, and let us do our improvement work with our protective force.

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TRINITY RECONNAISSANCE.

By Forest Guard O. M. Evans.

Our reconnaissance work is only a part of the larger task of getting complete data for a scheme of management for this Forest. This scheme of management is called a working plan. The working plan deals primarily with two things: First, what we have - the forest, and second, what we are going to do with the forest.

The "what we have" part includes a full description of:

a. The topography of the area.
b. The kinds, amounts and conditions of timber.
c. Young growth and reproduction.
d. The soil.
e. Logging condition.
f. Markets.
g. Growth tables, etc.

The "what we are going to do with the forest" part deals with:

a. The kinds and amounts of timber to cut.
b. How much we can cut each year.
c. The best uses of the material.
d. How to cut so as to get the best reproduction of the best species, etc.

In this District the work has been divided into five steps. Step 1 was a rough estimate, by the Rangers, of the stand of timber on each District. This was done in 1908, and gave a total stand for the Forest of about eleven billion board feet.

The second step, in 1909, was a revision of this first estimate, together with maps showing stand types, and resulted in a stand of twelve billion board feet.

Step 3 was the division of the Forest into blocks, by Mr. Louis Margolin in 1909. These blocks will be units of management and are: The Stuarts Fork, Weaverville, New River, North Fork Sub-block, South Fork, Mad River and the Harrison Gulch Blocks.

Step 4 is our reconnaissance work, or the gathering of the silvical and topographical data by a 5 per cent strip survey.

Step 5 will be the making of a working plan for each Block.

Work Accomplished.

We began the reconnaissance work on June 15, 1910, with a party of four, and by October 15 had covered 80,000 acres of Forest Service land with 30,000 acres of patented land. This area fell mainly in Grouse, Eltapom, and Corral Creeks. We found 641,000,000 board feet. Of this stand approximately one-half was Douglas fir, one-fourth yellow pine, one-tenth sugar pine and the balance white fir and incense cedar. In 1911 we began with a party of four on May 15 - increased to eight on July 1, and finished with four on November 28. We covered 156,000 acres of Government land, mapped and got an idea of the stand on 44,000 acres of patented land - a total of 200,000 acres, including the drainage of Miners, Little, Big, Carr, East Fork, Hay Fork, Browns, Middle Fork of Cottonwood, and Upper Salt Creeks.

We now have complete descriptions, with the kinds, amounts and condition of timber, by sections and units of 238,000 acres of this Forest (34,000 acres of patented land not included) with a stand of 1,850,000,000 board feet. We also have contour maps (100' contour interval) of the area, which a little more than covers the proposed Humboldt and Eastern Railroad sale area.

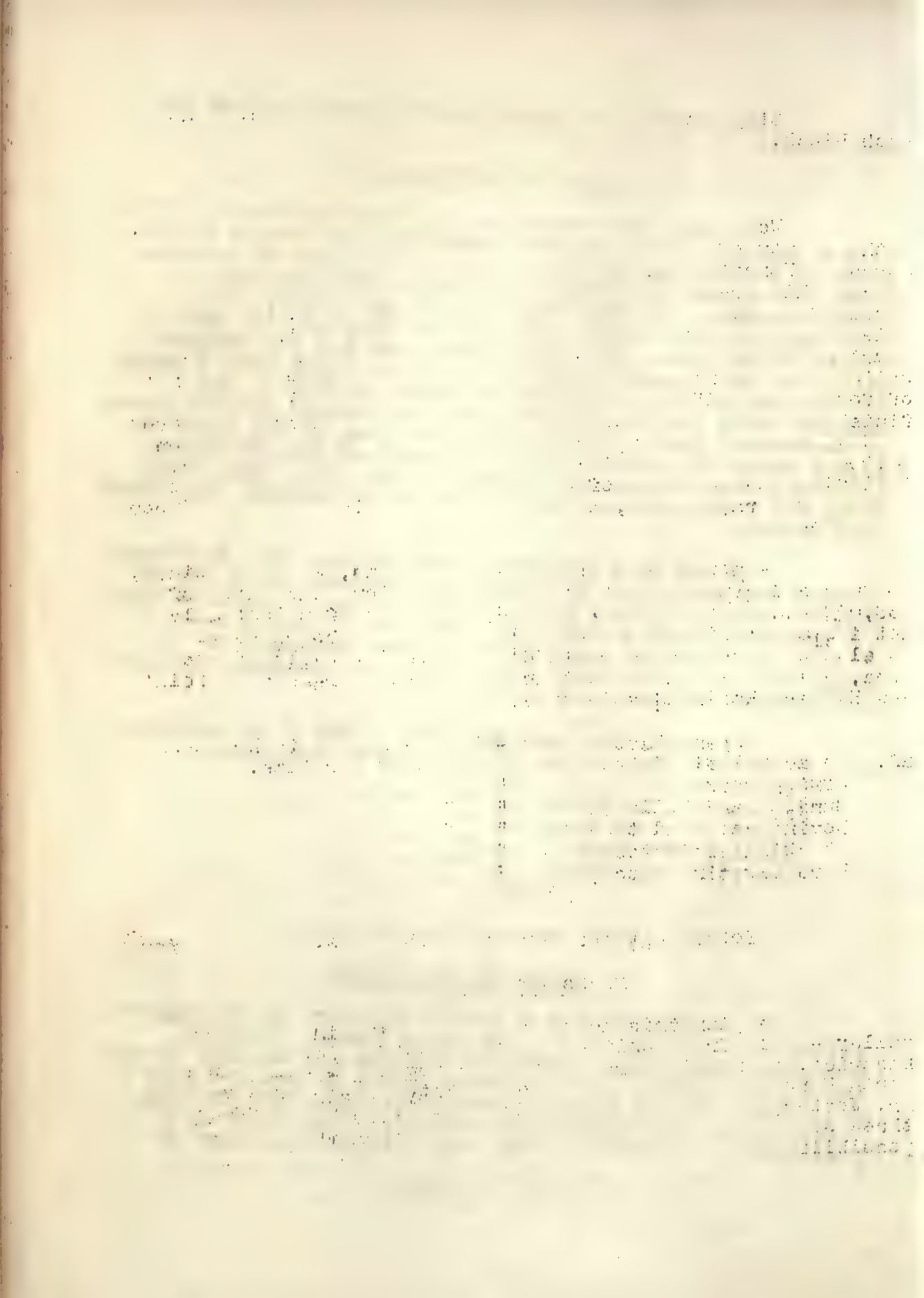
We spent last season - 1911 - May 17 to November 23. On actual field trips 53 per cent of our time.

Office work	20	" "
Sundays and holidays	15	" "
Moving camp and travel	6	" "
Checking estimates	4	" "
Fire fighting, etc.,	2	" "
	100	

Total cost per acre was 2.8 cents.

Plans for Next Year.

We plan this next season to start in the Hayfork valley - Tule Creek Unit - finishing Ranger Patton's District, then going around via Hyampom and working up the South Fork River. We will have a party of six or seven - Mr. Potter, Mr. de Forest, perhaps at times Mr. Coffman, three student assistants, and myself. Then there is a possibility of having a "bug" man with us, as there is



considerable insect infestation in the area to be worked. Before starting the regular reconnaissance work, we plan to examine the area of the proposed dredger sale in Ranger Chamberlain's District.

Best Methods.

The methods outlined at last year's Meeting will be continued. However, I think the Ranger in whose District we are working should be attached to the party most of the time, if not all the time, and take a regular part as a member of the party. His knowledge of the country is invaluable. Then in the future he would take a most active part in carrying out the working plan, and there is no better way of getting intimately acquainted with all the timber in the District than on reconnaissance. There is no reason why an Assistant Ranger could not be detailed to carry out the District Ranger's protection plans. We will have an emergency phone in camp, so that the Ranger can be reached at any time. Then the reconnaissance party is equipped for fire fighting and will give help in case of fire. I believe the knowledge, by the people, that there is a party working in the vicinity will go far to prevent the setting of fires. I further think other Rangers should be detailed to the reconnaissance party for short periods before and after the dangerous fire period.

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GETTING INFORMATION ABOUT
THE TRINITY.

By Forest Assistant H. de Forest.

National forestry in the United States is well past the point where we are content with knowing the trees alone. Today we want information covering a wide range of subjects,- from lumbering costs to the fungi found on each Forest. More than this is necessary because we want systematized information. That is, whatever we find out about any subject must be properly arranged, different subjects must be placed in right relation to each other, the practical bearings of all must be investigated, and all this to the end that what we find out may serve various practical purposes. For one instance:- the location of certain general rock classes on this Forest in relation to certain general types of soil into which the rocks disintegrate, with the capabilities of these soils under differing conditions of moisture, heat, and bacterial growth, to sustain different plant growths, from forest trees to fruit trees and vegetables.

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We all can - and this is an important point - although we none of us have any expert knowledge along many lines, we all can still easily get the right data and pass it on to the specialist who has special training on that particular subject for him to give us his expert opinion. The information we gather will be faulty in many respects, but it will be good enough to be mighty useful, and it is the best we can do because the Forest Service cannot have a lot of specialists on each Forest all the time. With the help of the specialists the Service has got we, ourselves, who are not specialists can accomplish a great deal. We can make it truthfully said that the Forest Service knows its Forests.

Now I don't mean that this getting of information does or ever should occupy the most prominent part place in the scheme of things for any Forest. Protection from fire and other serious damage, the improvements hinging upon that work, and the estimating of the timber capital of the Forest, such matters are, of course, the chief ones, aside from the actual business of the Forest in grazing or timber sales, and so on.

The chief point I want to make is just this, that we can all of us, besides this regular work, often only in a haphazard way, but yet in a way that is bound to sum up to a big total,- get hold of things that will, with the help of others, enable the Forest Service to know this Trinity Forest thoroughly, from its rock and soil structure, its various kinds of plant and animal growth, up to its economic activities.

We can have specimens here in this office of all the tree species of the Forest, in bud, in flower, and in leaf, with specimens of the wood and bark. We can have also specimens showing the variations in form of leaf of the same species growing under different conditions. We can have a collection of all the forage plants, all those that are browse plants, and of all plants poisonous to stock.

We can have all the brush species. In our general herbarium we can have most of the smaller plants that go to make up the ground cover. There will be new, unnamed species found in this botanically little known region. Indeed more than one new species was found last summer. We can have specimens of the insects injurious to tree growth in this Forest, showing them in their different life stages, with examples of the damage they do to tree growth. We can have a collection of the various fungi found here. We can have another of the rocks occurring on the Trinity. Another of the soils showing on a base map where the different main classes of soils are, and be able to tell about what sort of soil is to be found on any part of the Forest, with something concerning its capability for producing marketable produce. [illegible] minerals to plants.

Now there are certain things I don't mean, and these are important too. I don't mean that all this would be undertaken by any one of us, or that any one of us would ever be asked to do much of this. Collecting stuff ranging from beetles to boulders would be a little too much for any one person, even if he had nothing else to do. Neither do I mean professional collecting, with special instruments for digging the little bugs out of the bark and elaborate plant presses with wads of blotting paper and big iron screws. No, I mean the kind of collecting that uses a jackknife for the bugs and a part of an old magazine for pressing plants. I do mean that, as I see it, any one of us who has a live interest in this forestry game can do a great deal along some of these lines in a way that is wholly incidental to his regular work.

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NOTES FROM THE DISCUSSIONS AT THE
RANGER MEETING MARCH 18-20, 1913.

Rangers' Clerical Work:

Too much time is spent by Rangers in the performance of office work. Two suggestions were offered and discussed as to how the Rangers could be relieved of a large amount of this work. The first suggestion was that they telephone as much work as possible to the clerks in the Supervisor's office to be typewritten there. If it is a report which requires the Ranger's signature, it can be sent to him to be signed. If it is merely an answer to a letter from the Supervisor's office, a memo can be filed as a reply and a copy of the memo sent to the Ranger.

The second suggestion was that it would be more advisable to have a traveling Forest clerk who could visit the District Rangers' headquarters at intervals to assist him when the work piles up, and also see that his files are properly kept. The chief objection to this is that even if a traveling clerk could be provided the area he would have to cover is so large that his visits would be at long intervals and in the meantime too much work would be allowed to slide alongwaiting his arrival.

Visiting officers from the Supervisor's office can put the files in proper shape and after that, with the aid of the filing scheme, the Rangers should be able to keep them in shape. One District Ranger asked whether it should not be a part of the qualifications of a District Ranger to be able to take care of the clerical work that is placed upon him at the present time.

The matter was placed in the hands of the resolution

committee and the following resolution was submitted and unanimously carried:

WHEREAS, The clerical work in the District Rangers' offices is burdensome and uses up much time that could be spent by the Rangers to better advantage in field work, to it RESOLVED, That clerical work in Rangers' offices be reduced to the minimum, dictation being taken over the telephone by clerks in the Supervisor's office whenever practicable, and also that a clerk visit the District Rangers' headquarters as often as possible.

Trunk Telephone Lines:

In the discussion of the scheme of telephoning in as much work as possible to the Supervisor's office the suggestion was offered that we should have trunk lines from each District Ranger's headquarters to the Supervisor's office free from private phones so that Government business could be discussed in privacy and without continual interruption. While this would be an admirable scheme, at the present time it is not altogether feasible on account of the expense involved.

District Rangers' Headquarters:

After a discussion of this subject the following resolution was prepared and unanimously adopted:

RESOLVED, That all District Rangers should be furnished with Government headquarters, having sufficient living room and equipped with a roomy office, and that they should not be required to own, rent or lease their own quarters.

Supervisoral Visits:

The opinion prevailed that visits to the District Rangers by someone from the Supervisor's office in a supervisoral capacity are not made often enough - that more frequent field inspection should be made. One suggestion was that a visit should be made in each District at least every three months by someone from the Supervisor's office and that sufficient time should be allowed to go over all important matters.

Forage:

It was felt that a higher cost of living and of horse feed in one vicinity over another should be met in some other way than as an addition to salary, and that a Ranger's salary should as far as possible be a measure of his work and ability; otherwise, if the salary of a Ranger is raised

to meet higher cost of living at one particular station and he is later transferred to another station, the higher salary goes with him, thus working a hardship upon the Ranger who may be assigned to the same station at a lower salary. For this reason it was felt that all forage should be paid by the Government in order that no officer might suffer from this cause on account of his location in a locality where feed is excessively high. The following resolution was, therefore, unanimously adopted:

RESOLVED, That all forage necessary in the performance of a Forest officer's work should be furnished by the Government.

FIRE PROTECTION.

It was voted by the Rangers that during the dangerous f i r e season either the Supervisor or the Deputy Supervisor should remain at the Supervisor's office. Mr. Hatton stated that it is the opinion of the District Office that as a rule either the Supervisor or Deputy Supervisor should remain at headquarters during the fire season in order to keep a grasp upon the situation for the whole Forest.

Should the District Ranger remain within reach of the telephone during the dangerous fire season, or should he get out over his District and among his patrolmen and lookouts?

After considerable debate the following resolution was introduced and carried by a vote of 5 in favor to 2 opposed:

RESOLVED, That the District Ranger should remain within telephone call during the dangerous fire season.

The question of one District Ranger taking charge of the protection work of two Ranger districts during the fire season while the other District Ranger gives his attention to pressing administrative work was discussed, but no Ranger was in favor of this scheme.

Lookouts vs. Patrols:

After considerable discussion as to the merits and efficiency of lookouts and patrolmen and as to whether either could be abandoned or decreased in number in favor of the other, the fol lowing resolution was proposed and adopted:

RESOLVED, That the present fire protection scheme of major lookouts supplemented by patrol is the most efficient for this Forest.

Subsistence:

Would it be more satisfactory to pay Fire Guards lower salaries and furnish subsistence? This question was put to a vote and defeated by 5 against and only one in favor.

Government Stock:

Advisability of having Government owned stock to pack supplies for fire fighters and improvement crews so as not to be dependent upon private owners and subject to possible inability to secure pack animals when needed. Ranger Patton thinks the Government could save money in his District by owning its own animals. In some of the other Districts, however, the scheme would involve too great an expense in the up-keeping of stock, and it would very often be impossible to get the stock to the points where needed with sufficient rapidity.

Socks for Fire Fighters:

Assistant Ranger Box's recommendation that socks be provided for fire fighters was received with marked approval and the following resolution was unanimously adopted:

RESOLVED, That socks be included in supplies furnished for fire fighters.

Use of Dynamite in Felling Snags:

The use of dynamite along fire lines in felling snags which would otherwise be a fire menace was discussed. This appears to be much easier and cheaper than to cut them down, and was reported to have been used to some extent on the Klamath Forest to fell insect infested trees.

Mr. Griffitts, who has had some experience in the use of dynamite in clearing land, stated that the top of the tree falls at the place where the tree stood and the butt is thrown to the side opposite to where the dynamite was inserted. While the District Rangers were authorized last year to purchase dynamite for use in this manner, none of them has as yet had occasion to try out this method. It was suggested that the Klamath Forest be asked for data regarding the use of dynamite for this purpose and that this information be sent out to the Rangers on this Forest.

Use of Powder for Signaling:

Ranger Garrett advocated the use of giant powder in signaling to patrolmen when it is necessary to call them in on account of the discovery of a fire.

Forest Service Torches:

A discussion as to the value of Forest Service torches in starting back fires resulted in a draw. Where the litter is very scarce a drop of oil from the torch will assist greatly in getting a back fire started. Where the litter is very plentiful a back fire can often be spread as easily or possibly to better advantage with the use of the shovel.

Improvement Work by Fire Guards:

It is quite essential that fire patrolmen should understand clearly the necessity for doing as much improvement work as possible, such as the brushing out of trails over which they patrol, changing to better grades whenever possible, posting fire warnings, etc., in connection with their patroling. There was some discussion as to whether a letter from the Supervisor's office to the Guards at the proper time would aid in securing better attention to this matter or whether it should be left altogether to the District Ranger to instruct the men and see that they do this work. No vote was taken upon the matter.

Equipment and Supplies:

The matter of securing our supplies from sources outside the region of the Forest was discussed. Nine Rangers voted against this plan and only one in favor of it. It is believed that the local good will and the assistance of the local dealers in the delivery of goods on the Forest, especially in emergencies, more than offsets the saving in cash to be derived from the purchase of supplies outside. In addition, there would be so many delivery points on account of the lack of transportation facilities through the Forest from Weaverville that no central storehouse could be established and the necessity of providing pack outfits and storage at so many points would entail considerable additional administrative work as well as expense.

Disposal of Emergency Supplies:

The disposal at the close of the field season of emergency supplies which are liable to spoil before they can be used next season was a matter of discussion. Should they be held over at a risk, or disposed of at public sale? The amount and location of the supplies has considerable bearing upon the course to pursue and each individual case will have to be determined upon its own merits.

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RESOLUTIONS

Timber Sales:

Messrs Chamberlain and Burbank read their sale contracts which provide that the purchaser shall furnish bonds which are executed and are under seals before the property falling into their hands is removed from the timber. Mr. Chamberlain explained the intent of the contract and the ability of the purchaser to post bond, which could then be known to avoid that delay in the matter that has previously existed.

The following resolution was placed relating to timber sales in areas where the timber is of inferior quality or has been seriously culled by early mining operations:

RESOLVED, That in Supervisor's sales the quality of the stand be taken into consideration in the appraisement of the stumpage rates, and that lower rates than the standard be charged for timber in stands of inferior quality.

Reconnaissance:

Dr. Heinecke states that notes as to snags and diseased trees in reconnaissance work would be very valuable, and he will prepare an outline to cover the points he desires recorded.

Grazing:

The reproduction of sugar pine as influenced by the tree squirrel was discussed. Some of the Rangers present were of the opinion that the small red tree squirrel is more destructive to sugar pine seed than the gray squirrel, and since it was only the gray squirrel which the present law was intended to protect, it would be a big advantage to have the protection removed from the red tree squirrel. The following resolution was carried by a vote of 5 in favor to 2 opposed:

WHEREAS it has been demonstrated conclusively that the tree squirrel is one of the greatest hindrances to sugar pine reproduction, be it RESOLVED, That the State Fish and Game Commission be requested to secure the necessary legislation to remove the closed season on the tree squirrel, in the counties of Shasta, Trinity and Tehama.

Free Use:

To encourage the use of dead timber under free use, the following resolution was adopted:

RESOLVED, That in order to encourage the use of dead and diseased timber, where it will answer the needs of the applicant free use be restricted to such timber, and the usual charge be made for any sound greentimber used in such locality.

Surveying:

A careful record of all known section corners should be kept by District Rangers. A description of each corner found and of the bearing trees should be kept and arranged systematically. All known corners should be indicated either on a base map or on Forms 974-10 and 11 used for that purpose.

The instructions on pages 51a to 51d of "Instructions for Making Forest Surveys and Maps" should be carefully followed and section lines marked in accordance therewith wherever they cross roads and trails.

Mr. Coffman suggested following the scheme used on the Shasta Forest of marking section and quarter corners by posting a white sign. A fire notice with the blank or white side out is tacked to a bearing tree or other tree near the corner. Posted in this way, they will always be recognized when found as indicating the presence of a corner and if placed in a conspicuous position can very often be seen to a great distance, lending aid in locating the corner and in running section lines.

GRAZING.

The question of quarterly grazing reports was discussed and it was decided that an annual report would suffice provided notes as to the condition of the ranges were recorded by the Rangers throughout the season so as to be available for use in the preparation of the annual report. The following resolution was, therefore, adopted:

RESOLVED, That quarterly grazing reports on the Trinity Forest be discontinued and an annual grazing report be submitted, provided that sufficient data be kept by the Rangers during the grazing season to properly enable them to cover the grazing situation in the annual report.

If there is occasion for additional grazing reports or for report in the spring upon yearlong ranges, they can be made by special report or by letter.

November 1 to 15 would seem to be a better time for the submission of this annual report by the Rangers instead of September 30, for the reason that at the latter date the stock have not all left the Forest and it is therefore

impossible to state fully the condition of the stock and of the ranges at the time the stock leaves the Forest. If all reports are in the Supervisor's office November 15 it will be possible for the annual report to the District Forester to be made up before December 1.

STATE LAWS.

Mr. H. L. Civen, district attorney for Trinity County, gave a talk relative to the State fire laws and the State fish and game laws, and the procedure thereunder.

An offender must be tried in the township in which the offense is committed, even though a justice of the peace in an adjoining township or county is closer at hand. Under no circumstances should he be taken for trial out of the county in which the offense was committed. There are five townships in Trinity County, corresponding to the five supervisoral districts. The justices of the peace within Trinity County are as follows:

		Supervisoral District,
H. F. Coffman,	Carrville,	1
H. D. Barber,	Weaverville,	2
James E. Dockery,	Hayfork,	3
E. J. Linck,	Ruth,	5

When an arrest is made the offender should be taken before the justice of the peace in the township in which the offense was committed. If there is no justice of the peace in that township, he should be taken before the nearest justice within the county in which the offense was committed. In the case of arrests in supervisoral district No. 4 where there is no local justice, the prisoner should be brought to the justice in Weaverville.

In some cases, to save a long journey for both officer and prisoner to the justice of the peace, a plea of guilty is received over the phone and a fine imposed. This is an irregular proceeding but may sometimes be resorted to in cases of extreme necessity. Or, if the prisoner is willing to plead guilty and it is not convenient to bring him before the justice, time and expense may sometimes be saved by having the prisoner make affidavit as to his guilt before a deputy county clerk, notary public, or some other officer qualified to administer oaths, and deposit with such officer an amount sufficient to cover the fine until the matter can be brought to the attention of the justice of the peace who has jurisdiction in that district. This is not regular, but if the prisoner is willing to make such affidavit of guilt and put up the money it is a safe thing to do. If the money deposited is less than the justice thinks necessary, or if the justice desires to impose a term of imprisonment,

he can re-arrest the offender. No one, however, but a justice of the peace or a judge can impose a sentence or fine.

The fine imposed must amount to at least the minimum prescribed by the law. If it does not, the justice or judge who imposed the fine is liable to the State for a balance sufficient to bring the fine up to the minimum. The justice may, however, impose a fine and allow the offender a certain length of time in which to complete the payment. For most of these offenses the law provides that either a fine or imprisonment, or both, may be imposed. A term of imprisonment may be imposed in place of a fine, or the offender can be sentenced both to pay a fine and serve a term of imprisonment.

An officer may arrest without warrant if an offense is committed or attempted in his presence. Otherwise a warrant must be issued by a justice of the peace before the arrest is made.

When an offender brought before the justice of the peace is found to be under the age of eighteen years the justice of the peace will certify the case to the judge of the superior court. When the case comes before the judge of the superior court he can either handle it himself under the juvenile court law or return it to the justice's court for trial under the ordinary procedure. If the judge of the superior court handles the case himself, he may either place the offender on probation under the care of some suitable and responsible party, or in extreme cases may commit the youth to a reform school. If placed on probation, the term of such probation is specified by the judge: if the boy behaves himself during this period the charge is dismissed at the expiration of the probationary period, but if, while on probation, new offenses are committed, the youth is liable to sentence both for the original and the new offenses.

With regard to search warrants, Mr. Given says that no officer has a right to search a man's house, tent or pack without a search warrant. If a man's house is entered without a warrant he has a right to defend himself against this invasion and also to resist a search of his pack without a warrant. If a house or pack is searched with a warrant and no violation of the law is found the officer searching is liable to a suit for damages. In case of a false arrest the man who swore out the warrant may be prosecuted by the defendant. This, however, is not very often attempted, and is not likely to be of serious consequence, if good faith was shown in making the arrest. The sheriff takes this risk every time he makes an arrest. If an officer feels absolutely sure that violation of the law will be disclosed upon search of a man's pack, he does not take much risk by making an arrest under such circumstances.

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Fish and Game Commissioner G. O. Laws had just returned from a detail in the Sacramento office of the Commission, and addressed the meeting relative to fish and game protection. He said he had received very positive instructions from President Newbert of the Fish and Game Commission to prosecute all violations and make no exceptions in any way or shape; even to prosecute in cases where there was only one witness for the state. In regard to the attitude taken by the Fish and Game Commission as to Rangers' services, he stated that the Commission does not expect the Rangers to neglect Forest Service work in order to enforce the game laws - that if a case comes up or if they hear of one and have other business which prevents their attending to it personally, they should notify him, Mr. Laws, and give him all the information in their possession and he will attend to the matter.

We should, of course, give Mr. Laws all the assistance we can within the Forest. One peace officer is under oath to help another in case of need.

The Rangers may obtain from the Fish and Game Commission their expenses incurred in connection with game cases, but by the regulations of the Forest Service must accept no per diem pay or other remuneration.

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HISTORY OF NATIONAL FORESTS AND THEIR PROTECTION.

Talk before the Monday Night Club, Watsonville, California, by Assistant District Forester John H. Hatton.

Introduction.

Some of the earlier announcements, I noted, called for a discussion on general forestry. That is a pretty broad subject and too comprehensive to treat even briefly in the course of an evening's talk.

I shall, therefore, confine myself to a short review of some of the factors which have contributed to forest history in this country, and in the course of the remarks will try to bring out one or two prominent phases of our public forest problems, particularly as they relate to our National Forests and their protection from fire.

You are practically surrounded here at Watsonville by National Forests, and National Forests, in the minds of some good and well meaning citizens, not only in California but elsewhere, are synonymous with "Preventatives of Local

development" or "Destroyers of human opportunities". I am glad to say that this impression is rapidly going out of the minds of the American people who have been and are most intimately affected by the withdrawal of these large areas of mountain resources.

Present Day Forestry.

The forest movement in this country has arisen out of various definite internal needs, the importance of which has not been better expressed than in the words of former President Roosevelt:

"The forest problem is, in many ways, the most vital internal problem in the United States."

And why is this true? It is true because our forest resources are inseparably linked and wrapped up with all the other important resources and industries in this great country. It is hard to conceive of an industry or resource which is not indirectly if not directly affected by our forests, whether publicly or privately owned. Any injury to these resources, therefore, must necessarily reflect injury to all others even remotely related to them. It is true because our future timber supply is already a serious problem. It is true because publicly owned forests cover only one fourth of the total forest area and only one fifth of the timber standing, while the remaining four fifths is in private ownership, on which forestry is scarcely practiced at all.

This leaves it up to the Forest Service, not only to utilize to the best advantage our mature timber on the National Forests, but to provide as far as possible for a future cut and at the same time, by precept and example, undertake to convince private owners of the necessity and wisdom of conservatively handling their forests.

A careful inventory a few years ago showed that 90 per cent of the forests in private hands was devastated by destructive use and the scourge of unchecked fires, while less than one per cent was properly handled for successive crops or effectively protected from fire. The conservation of the public forests is a large task, but it is the smaller one before the nation. The larger task is to induce private owners, 3,000,000 of men, to take care of that they have. With these facts before us it should make little difference to private or ~~xxx~~ public timber interests whether the present rate of consumption, and waste, and loss, will exhaust our timber supply in twenty years or in fifty years, or a hundred years. All these periods of time must be struck from the calendar. This country cannot afford, either from the standpoint of public or the most selfish private interests, from the standpoint of

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nor or the standpoint of the future, to leave them there.

The future timber supply in this country, then, and our problems of protection and conservation and use, are largely in private control. Today we are to be congratulated on the fact that forest protection has become a living issue with the leading lumbermen of the country. Only a few years ago it would just about as much to lumber men, the newspapers and the lawmakers of the timber states, as nothing at all. A joint association, organized under the convincing leadership of men trained in the Forest Service school of thought, last year surveyed and put out money for the protection of 10,000,000 acres of timber land involving four hundred billion feet of timber.

Self-made lumbermen need to learn this lesson well from their northern brethren. There is some victory in being won for Mother Forestry, through timber owners who are realize that forest protection really means self protection and self preservation.

But the cause of forestry in this country will never have full victory until the public itself, the American people who do not own timber, are brought to realize the benefits. Forester Allen, of the Southern Forestry and Conservation Association, in addressing a meeting of the Association last December, sounded a keynote in which he said:

"If you are to be fully successful in your local protection work, if you are to utilize your forests economically, if you are to get living prices for your products, if you are to be taxed justly, - in short, if you are to place forest industry on a sound economic basis, the public at large must be made to realize the benefit that lies, not in forests, but in forest industry, maximum and permanent. The community has little to gain from forest preservation unless forest preservation encourages the industry that makes forests of use and worth preserving . . . . . The greatest need of the forest situation is for honest, vigorous, unceasing spread of knowledge concerning forest economics."

Forest History.

I have given you something of present day forestry, but a brief sketch of the development of forestry in this country from its earlier beginning might be of interest, also.

Although Congress, over a century ago (113 years ago, to be exact,) provided for the purchase of timber lands to supply the needs of the Navy, and various later Acts made similar provision for setting apart forest land for this and other specific purposes, no attempt to secure the comprehensive

administration of forests on the public domain was made until 1871, forty years ago, when such a bill was introduced by the Forty Second Congress. This bill failed of passage.

In 1876, five years later, $2,000 was appropriated to employ a competent man to investigate the timber conditions in the United States, and in 1883 an Act was approved creating the Division of Forestry in the Department of Agriculture. This Division became the Bureau of Forestry July 1, 1901, and employed nearly all the trained Foresters in the United States. But the actual administration of forest lands remained with the Department of the Interior, which Department had neither system nor trained men to provide for conservative forest management.

The necessity for Federal control over certain forested areas, in order to protect the National timber supply and insure permanency to irrigation projects in the west, was responsible for a brief section in the Act of March 3, 1891, empowering the President to establish forest reserves. President Harrison, on March 30, 1891, first exercised this power in the creation of the Yellowstone Park and timber land reserve.

But it was found that there were many local interests depending upon the resources of the National Forests (at that time called Forest Reserves) and many difficulties arose through the lack of administrative facilities. In an effort to alleviate this condition, the National Academy of Sciences was requested to recommend a National forest policy which resulted in the Act of June 4, 1897, under which, with various subsequent amendments, the National Forests are now administered. The principal amendment was the Act of February 1, 1905, which transferred to the Secretary of Agriculture entire jurisdiction over the National Forests except in the matters of surveying and passage of title.

Our forest history in this country, then, dates back a little over one hundred years, but took no definite form until forty years ago, and the era of actual accomplishment, as far as our public forests are concerned, goes back only fifteen years, and really only seven years, or since the complete transfer of their administration to the Department of Agriculture in 1905. We are, indeed, very young in actual forestry, but in this brief period much has been accomplished.

Our National Forests, counting those in Porto Rico and Alaska, now number 158, with a total acreage of a little over 190 millions. In the United States proper, there are 152 forests with a total area of a little over 163 million acres. In California we have approximately 24½ million acres, counting about 3½ million acres of patented land within the boundaries.

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The total forested area of the United States is now about 550 million acres, or approximately one fourth of the total area of continental United States, 54½ per cent of which is in National Forests, counting extensive areas of barren country above timber line.

Contrasted with Germany, we find that 32.9 per cent of her forest area is in public or state control, and 33 per cent of the entire forested area of European Russia is handled by the Government. Most of the European countries have far out-stripped the United States in forestry.

Aim of National Forests.

While the advisability of establishing National Forests has been questioned by some, the Government has had but one aim in setting these areas aside,- the best permanent use of the land by the people, and the prevention of waste of any of its resources.

These uses, as you all know, are multiplied and varied, and include lumbering, mining, grazing, water power, and many others. Different states, or particular localities in any one state, may depend upon any or all of these different industries, but in any case the resources of any subdivision of the country, either by regions, states, or by portions of a state, should be considered as contributing to and sharing in the general good.

In many portions of the West, practically every important industry depends, for its present existence and perpetuity, upon the Forests of the mountains, and forests can serve all these interests best only when placed under a management which will insure harmonious development and the aggregate good of all. This, in substance, is the aim of National Forests, and the foundation upon which the whole theory and practice of the administration is based.

Forest Protection.

The arch enemy of the forest is fire. Fire is the greatest single element working against the realization of the principle of maximum use and waste prevention. Conservative estimates, prior to 1905, showed that ten million acres of timber land were destroyed annually in this country by fires alone; and leaving out of the consideration the loss in human lives and property, and the water and timber resources of the future, the lowest estimate in timber values exceeded, on an average, $50,000,000 each year since 1870.

The total appropriation for the entire Department of Agriculture last year was a little less than $17,000,000. That for the Forest Service, to which the management and protection of all our public forests are committed, was less than $5,000,000. The fire loss for one year at that time would pay the present running expenses of the Forest Service for ten years.

A careful study of the fire problem then showed plainly the truth of the old adage that "Everybody's business was nobody's business", and thus it came to pass that fires were seldom fought until private property or human lives were endangered. Nor was it wholly a matter of indifference on the part of the people who would naturally have been most interested in extinguishing fires, for many of them occurred beyond the reach of settlements. It is not necessary for me to tell this audience that much of the 190 million acres of territory covered by our National Forests is beyond the reach of settlements, and would be wholly unprotected if Uncle Sam did not provide the means of protection.

Lightning strikes where it happens, and many campers and mountain travelers, without surveillance, grow careless in inverse ratio to the distance they get beyond the confines of habitations. With much of our territory, then, only under an efficient and systematic patrol during the danger season, could it be hoped to detect and extinguish fires in their inception. The old adage of "a stitch in time saves nine" never had truer significance than in the detection and suppression of forest fires.

I am reminded just here of an amusing fire report which came to my attention some time ago. A certain Forest officer reported a fire, on the regular form used for these reports. One of the things called for is the actual or probable cause of the fire and what action should be taken against the offender, if apprehended. In this case lightning was the offender; in other words, the cause was not within the scope of human calculation and was what is ordinarily termed, in common parlance, an "act of God." The report was endorsed: "No action recommended."

I want to make this broad statement: The Forest Service is aiming toward absolute protection from forest fires. So far this has not been accomplished, but absolute protection is the goal toward which the Service is striving. It is the watchword, the "shibboleth" in our National Forest administration. Of course, fire is used by the Service to clear up debris left in saw milling and other operations, but this is done when the danger to remaining forest growth is either

absent or at a minimum. Beyond this the Service does not go. I want thus to state definitely the policy of the Service on this subject of fires, because I know there are good people in California who view such a policy as most hazardous.

Most people believe in life insurance. We believe that money spent in forest protection is not dissimilar to that. In life insurance there is the possibility of outliving an endowment policy, and there is the other possibility of not outliving it. But in any case the principle of life insurance is such that whether we die or live, it is a pretty good investment for whoever receives the benefit. One particular tract of timber might escape a serious burn for a decade or longer, or until it is harvested, but there is the likelier possibility that it might not, if left to take care of itself. The history of forest destruction shows plainly that effective, or even imperfect, protection is immensely profitable.

$50,000,000 of loss annually, since 1870, would have paid for a lot of effective protection when we consider that the National Forests in this country, with their great bulk of business outside of fire protection have been administered, and pretty effectively, too, on less than three cents per acre.

Light Burning.

But to return to the forest protection policy and fire hazards. A good many people believe that with complete protection from fires, underbrush, debris, and young growth, will get so thick that nothing will stop a fire when it once starts. These people advocate what is called "light burning" every two or three years, to keep down the accumulation of inflammable material. One of the largest timber owners in the State, Mr. T. B. Walker, not only advocates, but undertakes to practice this theory. A study of his light burning operations in 1910 showed that he had little or no regard for the unmerchantable timber, and was concerned wholly with the protection of his merchantable forest. In the August, 1910, number of the Sunset Magazine, there appeared an article by Mr. George L. Hoxie on "How Fire Helps Forestry." Mr. Hoxie, in this article, invokes the aid of fire in preventing serious conflagrations. He calls it a "servent."

The people of this country may rest assured that the Forest Service stands ready to adopt any suggestions which will really aid in forest protection. In fact, one of the special pieces of work which will be done this coming season will be a further study of this subject of light burning. It has been studied before, but the results so far show the practice to be wholly incompatible with real forest protection.

The Forest Service is already open to criticism. It seems to me, however, that the two schools can never get together until they present the study from similar standpoints and each take into account the same factors.

The light burner has little or no regard for seedlings and young growth. He sees only his timber, and, as a rule, is not a scientific or close observer. But, they tell us, he is a practical observer. I want to say that if science or scientific observations are anything, they are, first of all, practical. What about the anti-tomine theory, the telephone, electricity, wireless telegraph, etc.?

They tell us that these magnificent California forests would not be here today if it had not been for the old Indian practice of periodic burning. But what of the younger forest, which is the basis and the foundation of our future timber supply? In my travels over the State I have noted that in many places there is absolutely no young forest between about thirty-five years of age and several hundred years, due to the old practice of Indian burning. But all age classes are present this side of thirty-five years ago, the time when this burning ceased.

This young forest constitutes the very basis principle of forestry in every country. In Germany it is carried so far that mature trees are not allowed to be taken unless young ones are planted in their places.

Surface burning has been practiced in the southeastern part of this country for many years. The process of rapid reduction of the forest to brush or complete waste is illustrated in many places. This proposition of letting light fires run through the forest annually or periodically is not at all new, but it has been considered and experimented with for a long time. In India, where conditions are even worse than our own, after long years of experience they have given up the idea of general surface burning, but use the principle in burning wide fire lines located at critical points. Mr. Graves, our present Forester, estimates that there are about twenty million acres only of open pine forests in our National Forests where surface burning could be considered at all.

This, taken with the great cost of such a system as is proposed by those who advocate this theory, would make it absolutely prohibitive. The use of regulated light burning, properly carried on, would cost on this area alone, he estimates, at least a million dollars above our present appropriations for the entire work of the Service. Just here I want to quote from a letter prepared by former District Forester Elliott, who considers the cost of burning slashing on logging operations to general or systematic burning as follows:

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"In timber sales on National Forests the purchasers are required to clean up the area after lumbering, which means that they must lop and trim the tops of the felled trees and scatter in the burning. The lumber companies sometimes have this work done by contract and sometimes do it themselves by day labor. It is safe to assume that the Government could not do the work at a less expense. The lowest average cost of felling and burning on land where the timber stands about 10,000 feet, is approximately $2.50 per acre.

"Applying this cost to the 3,000,000 acres of the most valuable pine and fir timber lands on the National Forests of California, we should have to meet an expenditure of over $5,000,000 a year in case we attempted to apply this 'light burning' theory to our forests every three or four years. Even if we assume that the average cut-over forest land will be much easier to prepare for burning than lands covered by slashings (and this has never been proved) - even if the cost should be cut in half, it would manifestly be out of the question to expend over $2,500,000 a year for such work. Let us go even further, and assume (which is far from being the case) that the Government forests resemble those privately owned, most of which contains the cream of the timber of the state. Even if the floor of our own forests was already as comparatively clean and accessible as that of patented lands, we could not hope to reduce the expense of preparation and burning below fifty or sixty cents per acre, in which case the preparation would be superficial, the burning incomplete and the protection of young growth most doubtful.

"Even this would involve an expense of more than $1,500,000 a year. The total annual appropriation for the Forest Service in California is now only $701,000.17. It would appear, therefore, that the practical application of this theory to Government forests is impossible at the present time."

Mr. Olmsted's calculations are based upon 3,000,000 acres of the best timber lands in California, and show that at fifty cents per acre, which is a little less than any figures we have so far been able to obtain on the subject, it would cost nearly $1,500,000 more than our total present appropriation for 20 million acres, which must be spread out over all kinds of national forest business and not limited to fire protection alone.

Organization and Brute Imperative.

Of course, fire will start in spite of all we can do. The most perfect system of fire protection cannot eliminate fire (contrary to a popular belief). But we can so organize that fires might be controlled after they do

start. We must be prepared to meet the fire situation upon the National Forests very much as a city fire department organizes for the protection of a city.

The Trinity National Forest last year won the fire record for the season, and the secret of its success may be attributed to effective organization. Telephone systems, lookout points, systematic patrol, co-operation with settlers, all tied in to a good central management, did the work.

The efficiency in plans and organization in our protective work is well shown by a comparison with the fires and fire losses in the seasons 1910 and 1911. All things considered, the fire hazard was about the same for the two seasons, but in 1911 a careful study before-hand was made of each administrative unit. We had 553 fires in 1910. In 1911 there were 603 fires - 50 more. The area burned over in 1910 was 387,300 acres. In 1911, 88,600 acres, or 298,700 acres less.

The average area per fire in 1910 was 554.8 acres. In 1911, 113.8 acres. In 1910 Class A fires comprised 37 per cent of the total number; in 1911, 40 per cent. (Class A fires are small ones, which are extinguished without additional help or cost.)

The timber burned in 1911 amounted to 15,497,000 feet B. M., which, at an average stumpage value of $1.75 per M. made a money loss of $21,000. Seventy five per cent of this loss was in Government timber; twenty-five per cent. in private. The money loss for the preceding year was $407,370: more than eighteen times as great. The coming season we expect to be even better organized. Fire protection is given precedence over all other National Forest work, and the most will be made of the funds available for this purpose.

In this connection I want to say that if you see a Ranger or Forest Guard staying "pretty" closely around some central point, during the fire season, don't charge him with being lazy or not earning his salary. In all probability he is there under orders and is carrying out instructions. He is fitting into a carefully thought out plan and is doing just the thing that is wanted of him. Stationery patrol is often found to be more [illegible] efficient than travel, and the average Officer would much prefer to be on the move than staying closely around in one place.

But to return to the use of fire as a servant. As a matter of fact, the Forest Service uses fire a lot more than all the timber men in the State of California in clearing up serious fire menaces after logging operations. Over 7,000 acres are now cleaned by fire each year in connection with timber sale operations, and this area will increase many fold when some of the large sales now being advertised are started.

work.

Recently, over a billion feet of National Forest timber has been advertised in addition to the billion feet advertised here on the Trinity on the application of the Humboldt and Eastern people last summer.

In contrast to this, only three lumber companies operating in the pine and fir forests of California made any pretense of systematically burning their slashings. Slashings constitute one of the most serious fire menaces with which the public or private timber owners have to deal. The Forest Service is practically the only organization in the State which uses fire for cleaning up this dangerous refuse.

But the light burning theory is intended to apply to forest lands in general, and not alone to cut over lands. It contemplates that at a certain time of the year, say in the spring or fall, when conditions are not so favorable for heavy fires, that fires be allowed to run at will. The old Indian fires, however, so often referred to by advocates of this system, practically wiped out young growth, and this is what the Service is here to foster and protect. They also did an immense amount of damage to mature timber, and in many instances entirely destroyed it, leaving extensive areas of brush or chaparral now wholly devoid of trees. On the National Forests alone in California, there are fully 2,000,000 acres of this brush, the vault of the so-called "servant fire." I cannot point out too forcibly the damage that even light burning does to young growth upon which the forests of the future depend.

Although a fire may run through the forest and do no apparent harm, tree growth is always checked and stunted, and left prey to injurious diseases and insects. This damage is not seen by the casual observer.

In contrast to this, a recent inspection of the Biltmore Forest in North Carolina, which has been under extensive forest management for twenty five years now, with complete protection from fires of all kinds, shows results perfectly astonishing as compared with outside lands which have not been protected. We have a thirfty, vigorous forest, free from disease, and producing, at a maximum rate. The entomologist or the forest pathologist could tell you something of the enormous damage done by fire in paving the way for these other injuries.

Brush Menace.

Just a word about the brush menace. How are we going to get rid of it? Where these brush fields are in the vicinity of forests, young trees will spring up under them through natural processes. In such localities the best way to kill out the brush is to protect from fire and allow the trees to shade it out eventually. The most casual

observation will show that this is exactly what happens. The ground litter which accumulates is added to the soil so slowly that decay takes place about as rapidly as the litter accumulates, thus adding slowly to the soil content. Fires in ground litter are not nearly so serious or hard to control as fires in brush, or crown fires in the forests.

The Idaho fires in 1910, have been cited as an example of what will happen to any forest in time with complete fire protection. Those fires would never have gained the headway they did if many of them had not started in inaccessible places, and the lack of funds, trails, telephone communication and men made it impossible to get at them in the beginning. They burned until a hurricane struck them, and then no power on earth could have prevented their spread. The "stitch in time" was not taken, and as a result 3,300,000 acres burned and over 3,000,000,000 feet of timber was destroyed, besides much property and many lives.

We cannot keep fire from starting, but with proper organization and system we can keep fires from running and doing the untold damage which the years since 1870 have recorded.

California Forests.

From one-seventh to one-sixth of the total area of California bears stands of timber that can properly be called forests. California ranks third among the timber bearing states of the nation, with an estimated present stand of 351.4 billion feet board measure, of which about 125 billion is in National Forests, National Parks, Military Reservations, unreserved public lands, Indian Reservations and timber owned by the State.

Between 90 and 100 billions is in the National Forests. The rest, 250.4 billion feet is privately owned. This represents a total stumpage value within the State of at least $765,000,000 to say nothing of the value of the land itself and the other resources besides timber. On every thousand feet of this timber burned, the stumpage owner may lose $2, but the people lose $8 in wages and in markets for supplies. Because of our peculiar climatic conditions, of all the unusual and complicated forest problems in the State, the most pressing is that of fire control. What are we going to do about it?

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NOTES AND PERSONALS.

The "Shasta Limited" is a very welcome addition to our exchange list, and we hope it will be a frequent visitor. We wish to congratulate the Shasta upon its very interesting and attractive initial issue.

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Ranger John T. Gray's absence from the Ranger Meeting, due to the deep snow on South Fork Mountain, was very much regretted by all present. We hope for better luck next time.

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Mr. Miller, Manager of the Snug, thinks there was more racket there the night of the banquet than could have been made by a tribe of Apaches. Perhaps Dr. Heinecke's presence accounts for this.

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Forest Assistant W. W. Jotter left Weaverville for San Francisco the day following the Ranger Meeting, for a six weeks' detail in the District Office. Mrs. Jotter and son accompanied him to San Francisco, and then departed for a visit with Mrs. Jotter's parents at their home near Cincinnati.

--

After the close of the Ranger Meeting, Mr. Hatton and Supervisor Huestis made a short trip into Hyampom. They report severe insect infestation in that region.

--

Dr. Heinecke remained for a few days after the Ranger Meeting and took a trip to Hayfork with Deputy Supervisor Coffman to study the needle fungus disease in that vicinity. The Doctor promises to return to the Trinity for a longer visit later in the season.

--

On March 13 and 14, Forest Guard G. F. Evans passed through the throes of the Forest Assistant Civil Service examination at Red Bluff.

--

Supervisor Huestis was confined to his home last week with a severe cold, but was on deck again the first of this week and is now visiting Ranger Hatton's district.

--

Ranger Brannan reports that the caterpillars of the tortoise-shell butterfly, which were so numerous last summer on the snow brush at the higher elevations, are at work on the blue brush and mountain mahogany on the warmer slopes and lower elevations in his district.

--

Reconnaissance field work on the Trinity is planned to start May 15 with a crew of seven men, including a cook. Prior to that date we hope to estimate the stand on the area of a proposed sale to the dredging company in District No. 7.

--

Mr. Evans has suggested that we furnish a key to enable readers to decipher the first pages of this issue. We regret we did not discover that the stencils were too dim until after too many of them had been cut to permit of duplicating the work. We hope, however, that sufficient benefit has been derived from the pages to pay for the added difficulty in reading them.

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If the Lord wills, and if our stenographers and "office boy" do not go on a strike, we hope to get out a normal size issue of the Trinity Forester next month, or, if we do not succeed in that, certainly in June, before we get too busy with the fire season. We would like to receive contributions from the Rangers for publication at that time in addition to the District Rangers' news letters.

--

A MODERN SAINT PATRICK!

A den of rattlesnakes was found on the north side of Stuarts Fork, about forty yards up river from the junction of Mule Creek, in the SE 1/4 of Section 32, T 35 N, R 8 W, M D M.

The day they were discovered (April 9) was an exceptionally warm spring day, and the snakes had evidently crawled out to enjoy the weather and were lying coiled, generally two and three within a foot of one another.

The den itself may extend several hundred feet into the hill, or perhaps only a few feet, depending, of course, upon the distance underground to which the cracks and loose rock extend. It crops out on the bank of Stuarts Fork in a place probably not more than twenty feet square, in a loose, shaken formation of porphyry, and here is where the fight took place, in which twenty-one rattlesnakes lost their lives. Out of the twenty-one, eighteen would range from two to three feet in length, while the other three were about twelve inches long.

The rattles were not counted, except on one very large fellow, which had ten rattles and a button. I should judge from five to ten rattles on the eighteen large ones

would be a fair estimate, while each of the little boys had only one rattle and a button.

While in the hottest of the fight several large ones got away crawling back into the rocks and dozens of the young ones were lost. I actually believe I saw more than fifty snakes, and I don't believe I had a single drink that day.

R. P. Box.

This account, sent in by Ranger Box, was accompanied by the following letter:

"Mr. Coffman:

"I am sending you the rattlesnake dope as per your request. I've heard of "buggy" Rangers and Deputy Supervisors over around Hayfork, but they even get so bad at Minersville that they have "Snakes" in their boots. You would sure have laughed to see me killing snakes. I had my big 30-40 army rifle, a hoe and a good green waddle, and I would thrash the dickens (Note: this is not the word used by Mr. Box) out of them with the stick, chop them with the hoe, and if one looked too big I'd turn old "Punkin Slinger" loose and blow him into eternity.

Very sincerely yours,

Bosco the Snake Hater,

Per R. P. Box."

--o--

Notification has just been received from the District Forester that the name of Alva Tracy has been added to the Ranger eligible list, with the highest rating on the Weaverville list.

FORESTRY

THE SIERRA RANGER

Vol. V - No.2

.. Quarterly Bulletin

issued at the headquarters

of the

SIERRA NATIONAL FOREST

Northfork

California

August 1, 1915

Editor

Paul G. Redington

Associate Editors

Chester E. Jordan

Ernest C. Dudley

Dwight C. Birch.

PERSONNEL

Sierra National Forest

Paul G. Redington	Forest Supervisor	Northfork, Calif
Chester N. Jordan	Deputy Forest Supervisor	" "
Ernest G. Dudley*	Forest Examiner	San Diego "
Dwight C. Birch	Forest Examiner	Shaver "
J.T.Shinn	Forest Clerk	Northfork "
M.B.Fulham	Clerk (S&T)	" "
Raymond Tyler	Telephone Operator	" "

Mariposa District.

Malcolm McLeod	Forest Ranger in Charge	Jerseydale "
J.C.Verly,	Assistant Forest Ranger	" "
John Mane	Forest Fireman	Chowchilla Sta.
J.C.Westfall	" "	Signal Pk.Region
T.J.Ferguson	" "	Jerseydale
Thomas Smither	Lookout	Signal Peak
E.T.McLeod	Telephone Operator	Mariposa Sta.

Sugar Pine District.

W.B.Taylor	Forest Ranger in Charge	Oakhurst, Calif.
H.I.Clark	Forest Ranger	" "
R.C.McKenzie	Forest Guard	Clover Mdw.Sta.
C.I.Boothe	Forest Fireman	Miami Station.
C.L.Gray	Lookout	Deadwood Peak
J.B.Hoskins	Forest Fireman	Meltie Meadow
George F.Leslie	" "	Bass Lake
Eva M. Clark	Telephone Operator	Oakhurst,Calif.

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*assigned, in charge Forest Service exhibit, Panama-California Exposition.

Northfork District.

A.K.Lofford	Forest Ranger in Charge	Northfork
E.S.Mainwaring	Assistant Forest Ranger	"
Claude McKenzie	Assistant Forest Ranger	Azalea Meadow
E.T.Allen	Forest Fireman	Placer Station
Arthur Henry	Lookout	Shuteye Peak
Cle Johnson	Lookout	Castle Peak
Lincoln Herrick	Forest Fireman	Northfork

Pine Ridge District.

Frank Price	Forest Ranger in Charge	Shaver
C.K.Barker	Assistant Forest Ranger	Cascada
K.C.Cathey	Assistant Forest Ranger	Mono Station
Charles Merced	Forest Fireman	Shaver
Pehr Olsson	Forest Fireman	Daulton Sta.
Thomas Parker	Lookout	Bald Mountain
J.E.Dillwood	Forest Fireman	Jose Station
Dona Price	Telephone Operator	Shaver.

Kings River District.

Roy Boothe,	District Ranger in Charge	Ockenden
A.H.Parkinson	Assistant Forest Ranger	
Bill Baughman	Assistant Forest Ranger	"
Ray Mills	Forest Fireman	Peterson's Mill
W.Bash	Forest Fireman	Oak Flat Sta.
C.K.Maxson,	Telephone Operator	Trimmer, Calif.

EDITORIALS

Campers' Registers. Now that we have excellent maps and campers' hand-books to give out to a seeking public, one of the old obstacles in the way of getting travelers' names in a register maintained at a ranger station has disappeared. We have something to offer in exchange for the name. Many hundreds of travelers have already registered at the stations where we maintain station registers, and by the end of the summer it is safe to say that the number will run into the thousands. With campaign ammunition which we have never had before, with an inducement to stop at a station which will appeal to ninety out of a hundred travelers, the scope and effect of our personal appeal work should be greatly enlarged. Incidentally the registers will give us a most valuable mailing list for publicity literature.

Sign Boards. The sign board problem on a Forest so greatly frequented by mountain travelers as is the Sierra is a big one. Forest officers, when considering what signs are needed most, should look at the problem from the viewpoint of the man who would pause in uncertainty at a point where a dim cow-trail leads away from the blazoned path. He must forget that he knows every foot of the country, and think in terms of one who doesn't. Good sign-board work will do more towards easing the worrying traveler's mind than anything else we can do. People who travel and see such things advertise them, and this encourages others to wend their way into what has heretofore been, perhaps, a mysterious and avoided region. The calls which have been made on the Supervisor's office for signs during the last year show the ranger's appreciation of the problem and his attempt at its solution.

Fire Protection. Four fire protective Associations comprising over two hundred settlers, 90 % or better of all who dwell within or near the Forest north of the San Joaquin River, have entered into cooperative agreements with the Forest Service to safeguard their brush fires and to assist in preventing and suppressing forest fires. This bodes well for the fire record this year -- not because the officers of the associations have affixed their names to the agreements, but because the members of the associations are enthusiastically in favor of fire control. Before long, a man outside of the association who thinks he can continue to handle fires when and

where he pleases, will be distinctly persona non grata with 90% of his fellow men, and that is a position which no self-respecting mortal cares to be placed in for any long period of time.

Forest Fire Photographs. The Forest Service collection of photographs has but a few depicting forest fires, and no pictures or slides are so much in demand for lecture work as these dealing with this subject. Every field man has a chance to make a big reputation for himself as a photographer, if he can remember to pack his camera to a fire. We don't want fires, but we must logically expect a few, and every one, large or small, offers an opportunity for fire views. The Association burnings in the north districts will give the rangers in attendance a great chance to secure some splendid scenes, and it is sincerely hoped that the suggestion will not be overlooked. The best picture sent in will adorn the cover of the next Ranger.

CONTRIBUTED ARTICLES

A Glimpse at Taylor's Back Country

by

Chester E. Jordan.

On July 12, all preparations having been made for a 12-day trip into the back country, we bid everybody at Ellis Meadow goodbye and set our course straight over the top of Chiquito for the North Fork of the San Joaquin. Arrangements had been made to meet Ranger and Mrs Bofford at Billy Brown Meadow, but for some reason which Bofford has not as yet been able to explain, he failed to reach that place. It is hard to believe that he was lost, but Mrs. Bofford's attempt to clear him by explaining her misunderstanding in regard to the route which she transmitted to us over the telephone, is rather shadowy. I knew something was wrong when we arrived at that meadow and found not even a horsetrack of the party that left camp some hours ahead of us. However, we wasted little time in waiting and went on to the Peak which for the first time I saw without its white cover of snow. In this Chiquito Lookout Tower sat Art Henry solemnly scanning the country for fires. He reported that up to that date the monotony had not been broken by the discovery of a single smoke. After being served with a very nice lunch by Mrs. Henry, we dropped down the other side of the mountain to Grizzly Meadow where Bofford overtook us.

Two days were spent in the Chiquito, looking over grazing conditions, then we pushed on to Graveyard Meadow. A few minutes later Supervisor Redfington and Mr. Godwin arrived,

bringing their appetites but no bed, expecting to find the latter some twelve miles further down the trail that night. First and foremost it was dinner they wanted, and from the way they waded into Mrs.Brown's hot bread we were led to believe that they had risen from their last meal without finishing it. They had planned to go from Graveyard to Hall's Half-Acre, but were advised by the others to leave that place for a future time.

Leaving them with the Moffords and the camps of stockmen in Graveyard, Mrs.Jordan and I pushed on to Clover Meadow where we spent the night with Ranger Clark, leaving next morning for Green Mountain. There we overtook Ranger Robert McKenzie escorting a band of sheep to their range on the North Fork of the San Joaquin. After seeing the band to their range, we went on foot over the upper end of the Northfork. This side of Mt.Lyell was a solid field of snow for about four miles so that part was left unvisited, but on the rest of the range we found more feed than the sheep can possibly use this year.

After looking over the sheep ranges, we went on to the 77 Corral range, to consider the poison areas. There we found quantities of the Cicuta, or Water Hemlock growing among the willows in the western part of the range, and after careful investigation decided that more cattle had died from eating this than from any other plant on the range. Sheep were grazing over the poison-infested areas with apparently no bad effects, and it looks as if the solution of the poison plant problem is simply to sheep these areas.

For three days in the high country we had lightning and thunder storms, with pelting hail in the afternoons. There is not a canyon except that of Kings River that has anything over the North Fork of the San Joaquin for ruggedness. It is even too rough for snakes - unless they all fled at our approach.

We turned toward home, on the road leading out from Jackass, and after riding a saddle-horse over it, I decided that the man who can drive a team over it can honestly be called a teamster. We were glad enough to accept Bert Hoskins' hospitality at Keltic that night, going on the next day past the Pines to Leslie's Camp,where we stopped long enough to help dispose of a couple of chickens that had been bothering Mrs. Leslie. May their sisters still be troubling her when next we pass that way! Tearing ourselves away from this luxurious camp we moved on toward Northfork, reaching headquarters just in time to catch a glimpse of Supervisor Rolingston before he left for the upper waters of the South Fork of the San Joaquin and the Middle Fork of Kings.

Seeing the Sierra in the Springtime.

by

Don Carlos Ellis

Weather is the subject of my story, for though I am assigned the pleasant task of working up the northern portion of my Sierra trip, weather exercised so controlling an influence upon my journeyings as to be a controlling factor.

The place is California, golden California, the land of sunshine; the time, the first of May. Long since had the snows of winter and the season of rain disappeared. I knew this to be true , because the railroad prospectuses and the long-time residents of the State said so, and I had been adequately assured from all sides, at the San Francisco office that now was the ideal time for my visit.

I had been unfortunate thus far in my selection of weather in which to visit the Forests. Because of the snow and the extreme cold, most of the activities on the Coconino and Tusayan had been closed, except the Backus University timber sale which I took in on the Coconino, and Ranger Kay's tourists and Indians at Grand Canyon. With the temperature ten and fifteen degrees below zero at Williams and Flagstaff where my itinerary required me to change trains in the wee sma' hours, I concluded that I would better proceed further south.

When I reached Prescott, rains had set in such as had not been known before in the history of the Southwest. I waited two days, hoping that the climate would let up so that I might see the Prescott Forest, but it only grew worse and the roads were impassable. I had to be content with the view of it which I obtained from the train window. I had honed to take the auto-stage from Phoenix to the Roosevelt Dam, but the stage could not run because the road was made up mainly of swollen , rushing arroyas. The Roosevelt Reservoir was soon thereafter filled to its capacity and running over -- and the State of Arizona had just been voted 'dry'! I can never again put any stock in the phrase "the sub-humid Southwest".

After these disappointing experiences, my last hope lay in the renowned and eminently dependable climate of California, and my hopes were partially confirmed by a two-hundred mile automobile trip through the Cleveland, and the Mt.Lowe trip on the Angeles, both in ideal weather, and a very exciting though dusty trip up Arroyo Seco, in which Supervisor Charlton, our driver, left no stone unturned or no part of our anatomy unjolted. I felt that in this state I had at last an equable clime. However, I would play safe, before going into the Forests further north. I would wait until late spring, when the sun shone seven days a week, when the streams would be full from the melted snows, when the early summer wild flowers would bedeck the hillsides in a profusion of color.

Well, as you may remember, I returned from the southern half of the Forest, drenched, but I had nothing on the Forest itself, for it had been going through the drenching process for a week prior to my invasion and continued the experience for a week after I swam ashore. However, I did not consider a moment allowing a little "unusual" weather to detain me from enjoying the wonders of the northern half of California's blue ribbon Forest, and was quite prepared to start northward next day. But my trusting disposition was doomed to receive another jolt. The blinding snow, which like a London fog (or to get nearer home, like the San Francisco variety) hid all the landscape from my view beyond the garden gate on that second day of May, convinced me that I should not be able to see much of the Forest while the storm was in progress. I spent a restful Sunday indoors and a profitable Monday and Tuesday near the heat registers of the Supervisor 's office, learning at very close quarters how a Forest is run. The storm came to an end on Wednesday, and my kindly and patient guide, the Deputy Supervisor, le me forth again. We made Fresno Flats that afternoon, by an easy ride, and Mariposa Station the next night, after taking in several Forest homesteads, the Crane Valley power development and the foothills of an entirely different country from what I had seen south of Northfork. The snow had disappeared from our course as rapidly as it had appeared, and Ranger McLeod had assured us, over the telephone, that at Jerseydale, at least, we would find the prodigal sun. Sure enough next morning it did shine, and right jauntily we three, McLeod, Jordan and I, rode forth. I think I had raved over much in McLeod's hearing the night before, of the unsurpassed scenic beauties of the Upper San Joaquin Valley and of other splendors

of the southern Sierra Forest. His pride in his own district was evidently aroused. He would show us a view which he was sure excelled everything I had seen. In order to reach a vantage point from which to witness the panorama and from which I would also be able to see a large part of the Mariposa Ranger District, and also to enable me to inspect an important factor in fire protection, we made undoubtedly the steepest long ascent which I had ever attempted on horseback, and at its end reached a fire-line which McLeod had under process of construction, a wide, clear break piled ten and fifteen feet high with brush which was later to be burned. He followed the fire break up hill and down dale, regardless of grade, and it was hard going in the newly plowed earth bristling with sharp, freshly-cut stumps and snags. But the prospect of the scene promised us at our journey's end spurred me on. Many times already had I been rewarded for a particularly arduous climb by the vista from the summit, and this was to be an especial treat after an especially hard climb. Meanwhile, I had tried not to see the clouds gathering, or the mist which was rapidly stealing in around us, but turned up my coat collar and hoped. I was third in line -- a bad third, as I usually was when riding over rough country with these seasoned veterans, and Pat was kept busy riding-b- running back to see if I were still coming. When I did reach the top, my friends had already dismounted, and McLeod was standing like Napoleon in the pass of the Alps. But how dejected! He pathetically waved his hand toward what I assumed was the panorama. "The view was off there", was all that he said, and I thought I detected a minor note in his voice. Our vision could not pierce five feet into the mist.

Weather may interfere with a Forest officer's vision, but not with his industry. The mist turned to rain, but we upheld the traditions of the Service that afternoon by digging a quarter of a mile of post holes and toting the posts to them. I generously and unerringly picked out all the rooty places in which to dig my holes, so of course seemingly dug less than my share. I can assure you that I did not do less than my share of toil. Bteween the four of us (Duncan had arrived on the scene), we managed to carry ten posts a trip. Once or twice I carried as many as two.

The last day of my stay in the Forest was devoted to an attempt to reach Signal Peak Lookout. Again the late snows stood in the way. Rangers McLeod and Duncan and Lookout Smither had started from their homes about four in the morning and

at the beginning of Signal Peak Road, at about ten o'clock on this bright, balmy, California May morning, after beating my way through a blinding snow and hail storm, the trio were huddled around a crackling camp fire coaxing a little warmth from it. The road to the summit was found impassable to horses or to men without snowshoes, and since neither we nor the horses were so equipped, we were forced to abandon the attempt to reach it.

Though I confess that I felt somewhat raw when I first entered the Forest, two weeks before, I was conscious of being very knowing when I emerged among the tourists from the East visiting the Yosemite. How they seemed to envy my weather-beaten and even mud-stained clothes and marvel at my wondrous wood lore. And as for horsemanship, I nonchalantly picked out the fiercest looking brute in the bunch on which to make the trail trip to Glacier Point. He was so spirited that he almost broke into a run when spurred.

I was fortunate in being able to spend much more time on the Sierra than was permitted me on the other Forests which I visited, and while the Forest officers everywhere that I have been have extended all possible courtesies, those on the Sierra took full advantage of the chance I afforded them of spreading their kindness thicker over a longer period. Through their generous efforts, under all circumstances some of which were decidedly trying, I was enabled to acquire a knowledge of National Forest Conditions,and an inspiration which will be invaluable to my work and has already proven most helpful to me and, I hope, to the public with whom I come in close and frequent contact at the Expositions.

As for the weather, it was at least consistent.

The cover illustration is from a photograph taken by Mr. D.F.Godwin of the Signal Peak Lookout, some two months after Mr.Ellis failed to reach the Peak. In the course of the trip on which the fire pack outfit was tested on the Sierra, Mr. DuBois, Supervisor Ayres, Mr.Godwin and Supervisor Redington inspected the equipment of the Lookout Tower.

Fire Danger after the First Rains in Late Summer.

by

H. McLeod.

I have noticed for several years that after the first rains we have had some bad fires as late as the last of November. The explanation seems to lie in the fact that these first rains wash the dirt and dust from the ground cover which then dries in the warm sun. This quick drying causes the pine needles and oak leaves to curl up and lie more loosely , creating a draft-way between these and the lower ground cover, and thus a fire catches very easily and travels at a great rate of speed. Of course the days are shorter and the nights cooler at this time, but when we have the above conditions to contend with, the inflammability is as great as at any time during the fire season. Usually , too, at this time the Guards and short term Rangers have gone off duty, and sometimes even the Lookouts are off.

These conditions , I think, do not apply to the grass country or to all altitudes; I have found them mostly in altitudes from 3000 to 4500 feet, and on the south and west timbered slopes. In these sections the early rains seem to me more of a detriment than a help in the fire situation.

Land Classification

by

D.C.Birch.

The extensive classification of the lands of the Sierra National Forest has been completed, and has been forwarded to Washington, it being the first to reach there. The following summaries will be of interest:

Land Classification

Gross area of Forest		1,651,939.62 acres.
Alienated land . .	150,722.94	
Listed Land . . .	10,198.43	
Indian Allotments	5,195.50	166,116.87
Net National Forest Area . .		1, 485,822.75 "

Areas of the different Types
of Non-Listable Government Land.

Timber Land	869,289.92	acres
Woodland	28,351.37	
Brush	176,771.72	"
Grassland (Meadows)	16,198.83	"
Barren.	383,526.13	
Total Non-Listable	1,474,137.97	"

Area left for intensive examination, . .	8,831.28	A.
Area of listable land	2,023.40	A
Area suspended until timber is cut off	680.00	A
Total probably suitable for agric.	11,534.68	

The classification of our forest lands has been one big stride in the direction of intensive forest management, and the data gathered will be of great value in the preparation of our Forest working plan. One of the striking facts about the present net forest area is that there is only about 11,500 acres, or less than one percent left that is suitable for agriculture. This means that over 99 percent of our present net National Forest area will be permanently put to the highest forest use to which it is adapted. Of the 869,289 acres of timber land, there is an area of 555,000 acres of commercial timber, and the remainder is a protection Forest the chief value of which will be to protect the headwaters and regulate the flow of our streams The 550,000 acres that now supports a stand of commercial timber will be the timber-producing area of the future , and as fast as possible the stand will be improved, to the end that a normal forest (the forester's ideal) may be obtained and kept.

The gathering data for our classification report brings to light the fact that we know comparatively little in detail about our climate and soil. Each weather recording station on the Forest is gathering very important data to be used in the future. We can learn a great deal more about our soils by studying them ourselves at every opportunity. Each Forest officer can gather valuable information by taking notes on the quality, depth and consistency of the soils throughout the Forest when making the rounds of his district.

HEADQUARTERS NEWS

On May 9, the Secretary of Agriculture, Hon.David F. Houston, accompanied by the Solicitor of the Department of Agriculture, Mr.F.C.Caffee, the Associate Forester, Mr.A.F. Potter, District Forester DuBois of San Francisco and Mr. David O'Neill of St.Louis, a personal friend of Mr. Houston's, arrived in Fresno and went by automobile from there to Auberry. At Auberry the Big Sandy Ranger Station was inspected and the party entrained in Ford track automobiles for Cascada, the terminus of the S.J.& L.R.R.line, stopping for lunch at the railroad company's section house at Webstone. At Cascada, the power development work of the Pacific Light and Power Corporation was looked over and the special use work of the Forest Service gone into. On the next day a trip was made into Huntington Lake Basin, the Secretary and other members of the party wading through deep snow to get there. The Ford speeders carried the party back to Webstone, where Deputy Supervisor Jordan and Ranger Mofford met them with horses, and Northfork was reached that evening via the Italian Bar bridge and trail.

At Northfork, twelve men sat down to dinner with the Secretary, all of the local officers having been invited to meet him. The next day the office was visited by the party and automobiles were taken to Nipinnawasee where a four-horse stage was waiting that in the afternoon took the party to Wawona over some of the worst roads that have ever been encountered in the memory of the oldest inhabitant. The next day was spent in visiting the Mariposa Grove of Big Trees and in going into the Yosemite Valley where one more day was spent before the Secretary left for San Francisco. The four days were spent in as strenuous work as any Forest officer would care to indulge in. The Secretary seemed to enjoy the trip immensely, and was particularly pleased to meet the men of the local force and to find out the cordial relations existing between the men and the users.

On April 27, the President signed a proclamation eliminating approximately 77,000 acres from the Sierra National Forest. A great proportion of this land was patented and the balance so intermixed with the alienated land as to render its administration a difficult problem. The land lies

along the western boundary of the Forest and its elimination will take away some dangerous fire country.

The following statement of receipts for the fiscal year 1913 will be of interest:

	Gross Receipts	Refunds	Net Receipts
Timber Sales	$9,713.76	$118.96	$9,594.80
Timber Settlement	71.03	--	71.03
Grazing	6,569.22	--	6,569.22
Special Use	1,424.46	25.08	1,399.38
Water Power	37,779.93	--	37,779.93
Total	$55,558.40	$144.04	$55,414.36

As the total appropriation for the administration of the Forest, including all improvements, salaries, fire expense, insect control and every other expenditure on the Sierra totaled $45,237.00 there is a balance to the credit of this Forest of $10,177.36

On June 12, Assistant Ranger Boothe handed in his resignation from the Service of which he has been a member for nine years. He has gone to Fresno to live, however, and though he will be missed from the Forest, can be looked up in town.

On June 9, Ranger J.K.Parley, who has been in charge of the telephone work for the past year and has served on the Forest for seven years, resigned from the Service to take up ranching for himself. Parley's many friends wish him success wherever he goes.

On July 9, Assistant Ranger T.L.Duncan resigned from the Service and will also go into ranching. He has felt that he could not afford to stay with the Service with employment

warranted for only a part of each year. Duncan leaves many friends and admirers in the Service who will be glad to know he will remain in the country and will wish him all sorts of success.

Delbert Boothe's place in the Pine Ridge District has been filled by the transfer of Assistant Ranger Barker from the Kings River District, who will be stationed at Big Creek hereafter. W.H.Parkinson has been appointed to the vacant statutory position and assigned to the Kings River District. The six-months statutory position vacated by Duncan has been filled by the appointment of Assistant Ranger Claude McKenzie. McKenzie will not be transferred, however, as T.J.Ferguson, who has often helped the Forest Service during summers will be located at the Chowchilla as "unappointed Forest Fireman" during the danger season.

The insect control work for this year closed with June 7. 11,640 acres were covered, in the Chiquito Basin, where 367 trees were cut containing 463,060 feet B.M., at a total cost of $2434.43, including ranger salaries. Mr.Birch, who was in charge of the work after Mr.Dudley went to San Diego, recommends that a crew be sent in to the Chiquito in the fall to clean up the area worked, getting the trees attacked by the escaped broods of the spring.

Assistant Chief Engineer F.E.Horeross of Washington D.C. with Mr.C.S.Brothers of the District Office spent several days on this Forest during the middle of May, going into the details of the Power Development work on the two big projects. Supervisor Redington and Deputy Supervisor Jordan met them at Big Creek.

On May 22, the Ahwahnee Valley Fire Protective Association held its meeting near Poison Switch. A large number of settlers attended, new officers were elected and the Association voted to continue its agreement with the Forest Service for another year.

At Northfork, on June 5, the members of the fire protective Association of the Northfork District met at a picnic near the Forest headquarters and much enthusiasm was evident in regard to fire protective work. New officers were elected and the agreement with the Forest Service was continued for another year.

On June 11, the settlers of the Crane Valley and Fresno Flats region met at a picnic on the shores of Crane Valley Lake and organized the Fresno River Fire Protective Association. The feature of the meeting was an address by the Hon. Denver S.Church, Member of Congress for this district. Mr. Church strongly urged cooperation with the Government, and pointed out strongly the benefits of cooperation in community development. Over 100 people were present.

In connection with one of the most enthusiastic gatherings that have ever been held on this Forest, the Mariposa Fire Protective Association held its annual meeting at the Chowchilla schoolhouse on June 12, the event being in the nature of a picnic. Over 175 people were present. The Association voted unanimously to continue its agreement with the Service for another year.

The trail up Cascade Canyon was completed early in May, and opens up probably the finest series of cascades on any stream in this portion of the Sierras. The trail has already been traveled by hundreds on visitors at The Pines. The cost of construction was $320.00 of which $218.00 was appropriated by Madera County, and $102.00 by the Forest Service. Ranger J.M.Farley was in charge of the construction. The Pines furnished subsistence supplies and a cook for the crew, at a total cost of $125.00. This brings the cost of the trail up to $445.00 which was well expended on four miles which besides being of interest and value to the traveling public of pleasure seekers is of value to the stockmen and to the Forest Service in that it cuts off some miles in the distance from Crane Valley to Beasore Meadow and the regions beyond.

After getting along for some years with a wagon that is rapidly approaching the end of the one-hoss shay, and with a harness suggestive of the outfit of a free nigger, the Sierra has purchased a first class wagon and harness. The wagon was built in Fresno, on our specifications, is painted green and has FOREST SERVICE painted in white on each side. The harness was made in Madera and is the best kind of a strong plain harness. The blinders have F.S. on them. A ranger need no longer be ashamed of driving the Government team.

On July 4, Huntington Lodge, located on the shore of Huntington Lake, was formally opened to the public. Over 150 guests were registered. The building is an extremely attractive one and persons who visit this country will be assured of a fine place to stop. It is under the immediate charge of Mr. Nickerson who during the winter time is Assistant Manager of the Huntington, near Pasadena, California. The land occupied by the Lodge is covered by the first 30-year tenure permit issued since the Act of March 4, 1915, was passed.

On June 2, Professor Walter Mulford, Director of the Forest School at the University of California, met Deputy Forest Supervisor Jordan at Big Creek and looked over the possibility of locating a summer school for forestry students near that place. It has been learned since that Professor Mulford has decided for this year to locate his school elsewhere, because of the fact that logging was not going on actively in the Big Creek region. He promises, however, not to pass up the Sierra another year.

On June 4, Supervisors Rodington and Patterson of the Sierra and Sequoia Forests respectively, were called to San Francisco to meet State Engineer W.F.McClure and representatives of the Sierra Club concerning the expenditure of the ten thousand dollar appropriation voted by the last Legislature for the construction of a trail in the High Sierras to be known as the John Muir trail in honor of the late John Muir. The District Forester and Assistant District Forester Headley were present at the meeting, and it was decided that the appropriation would be spent on the two Forests above mentioned at the rate of approximately $5000.00 a year for the next two years. On the Sierra, the work will consist on continuing the trail from Crouse Valley up the Middle Fork of Kings River, through LeConte Canyon and the Muir Pass Another crew, working on the San Joaquin drainage , will bridge French Canyon Creek at its junction with the South Fork of the San Joaquin and will continue up to the head of Evolution Creek, clearing out and improving an old trail seldom used because of the lack of a bridge, and fallen into disrepair.

On June 5, Mr.C.C.Bruner of the District Office reached Northfork at noon. As the meeting of the Northfork Fire Pro-

tective Association picnic was going on, Mr.Brunner was able to meet a number of the Forest users that afternoon. On Monday he went over accounts matters very thoroughly with the clerk. Field visits by District Office men are certainly desirable. Hereafter Mr.Brunner will be understood as a conscientious officer trying to keep the Forest accounts straight - not as the natural enemy of the field force, waiting for a chance to pounce upon every seemingly unimportant error or omission.

There have been ten fires on the Sierra this summer, to date, burning over a total of about fifty-four acres,more than half of which was outside the boundary, and a large part of the rest on patented land inside the Forest. August, however, is always the heavy fire month and every member of the force is on the keen lookout for a smoke or the rumor of a smoke.

About forty acres on the 77 Corral Range is being fenced against cattle. The poison, both Cicuta and larkspur , is so abundant that all plans for eradication have been abandoned. The Service furnishes the wire, and the grazing users the labor for constructing this fence.

The new folder map for the Sierra Forest has been published and the Sierra this year will probably use nearly 5000 of them. Besides furnishing much information about the country and the game laws, they contain an accurate map of the main features of the Sierra Forest. These maps, as well as the "Campers' Hand-Books" are in great demand by the travelers who have been coming to the mountains in great numbers during the last month.

On July 3, the Office moved to the Ellis Meadow summer camp.

A fine new clock was installed in the Northfork office on June 19. This has been regulated by the railroad time, and all lookouts are given the time by this clock every morning. This will eliminate the discrepancies hitherto found in fire reports.

Forest Examiner Dudley is still at San Diego, in charge of the Forest Service exhibit of the Panama-California

exposition. There is at this date last year the Sierra had three busy technical men, this year only a part of the time of one technical man. Mr.Hill has been transferred to the San Francisco office, Mr.Dudley lent to the San Diego Exposition, and Mr.Birch sent to Shaver to do miscellaneous ranger work. What technical work is done -- such as reports on cut-over areas, estimates of timber, etc., in the district around Shaver -- will be done by Mr.Birch, but no special technical investigation is being carried on this summer on this Forest.

In June 28, District Forester DuBois accompanied by Supervisor Lyres of the Stanislaus, arrived at the Mariposa Station. D.P.Godwin and Supervisor Redington going north from Northfork met them at this place, and several days were spent in testing out the new fire pack equipment. One of the sets consists of two water bags connected with a hand pump by hose, and the tests were made to find out just what value an apparatus of this kind has in fire suppression. Several fires in different kinds of cover were set and suppression time noted. Eight of these sets will be installed on fireman stations in the two northern districts this summer, and by the end of the season it is hoped to have more accurate data on their efficiency efficacy and on the defects which practical experience may disclose.

The Office of the Forester has approved a requisition for a wide-carriage type-writer for this Forest. This will mean both less work and neater looking payrolls for the Sierra.

Rolled barley for forage for the horses of the Forest officers has been ordered upon competitive bids. In this way more barley for the money has been obtained than if each man had purchased his own, barley being laid down at Exeter for $25.80, at Friant for $21.80, at Cascada for $32.60 and at Raymond and Merced for $24.70 per ton.

On July 26, Supervisor Redington went to Fresno for the purpose of conferring on special use matters with Mr. G.C.Ward of the Pacific Light & Power Corporation and the San Joaquin & Eastern R.R. Company. While in Fresno Mr.Redington also attended to the matter of obtaining supplies for the John Muir trail crews.

On July 12, Deputy Supervisor Jordan and Mrs.Jordan left Ellis Meadow for a trip into the back country of District 2 -- the Sugar Pine District. Ranger and Mrs.Lofford accompanied them through the part of their way leading across District 3, the whole party visiting Shuteye Lookout . Most of Mr.Jordan's time was spent with Ranger Mc Kenzie looking over the sheep ranges on the North Fork of the San Joaquin and the poison areas on the 77 Corral Range.

DISTRICT NEWS.

Mariposa District.

The weather has settled into the steady,dry heat of summer, but stock still looks fine.

The new telephone line from the Maine Lostfall cabin along the county road to the Mariposa Station has been completed.

The Signal Peak Lookout Station which was badly damaged during the winter is again in repair.

On Monday, June 28, District Forester DuBois and Supervisor Ayres arrived from the Stanislaus Forest. They were joined the next day at the Mariposa Station by Supervisor Redington and Mr.Godwin of the District Office. Mrs.Redington, Miss Godwin, Miss Tribble and Miss Newman accompanied the party. On Wednesday the new District 5 water pack was given a thorough try-out on an experimental burning which proved extremely interesting. The McLeod combination fire tool was also given a good fair trial.

On July 1 the entire party inspected the Signal Peak Lookout where Thomas Smither had just been installed as Lookout Man (taking the place of John H.Smither, our pioneer Lookout). Mr.Smither had not been on the job long enough to have received his new uniform, but welcomed the visitors who inspected the water tram, and went over the tower on the peak. It is to be regretted that the Godwin locator was not yet in working order, the new map having been received only the day before, and not having been oriented perfectly.

Supervisor Ayres 'phoned to his Pilot Peak Lookout in the Stanislaus Forest, who flashed heliograph signals which were plainly seen and answered from Signal Peak.

The party returned to Mariposa Station for the night and went on the next morning to the Sugar Pine District.

We are sorry to report the resignation of N.E.Duncan who will be greatly missed in the Mariposa District.

Sugar-Pine District.

Forest officers, with the help of settlers, have rebuilt the bridge across Redwood Creek which was taken out a year ago by the floods, thereby opening the road from the head of Crane Valley to Sugar Pine Mill and other points north.

Assistant Ranger R.C.McKenzie started back June 25 to Soda Spring Meadows, to meet the sheep of R.C.Bach and escort them to their range on "77". He reports lots of snow on the trails at that time.

A trail crew consisting of four men -- O.C.Murray, Lawrence Fay, J.E.Trask and D.E.Morrow, who started on July 1, have opened up the trail from the upper end of the new Cascade Canyon trail to Chiquito in good shape, and are now getting out timbers for the bridge to be built across Chiquito Creek.

Material for the Grave-yard-Clover telephone line is all on the ground and construction will begin at once.

Ranger Clark took the road to the back country in the latter part of July, to take a load of wire fencing to the "77 Corral" range. This fencing is to be used around the area badly infested with poison of several sorts, to protect stock against it. Ball Bros., users of the range, will put up the fence, the Government providing the wire. Ball Bros. also plan to dig a lot of the larkspur out of the range.

J.F.Beasore, one of the old-time settlers of the County passed away on June 5, and was buried at Fresno Flats on the 6th. Mr.Beasore was well known to the men of the Forest who are sorry to see these pioneers going.

Northfork District

On July 7, District Ranger Lofford and his family moved into summer quarters at Azalea Meadow. Assistant Ranger C.McKenzie and wife are also camped at Azalea.

Arthur Henry again took the Shuteye Lookout, June 14, and as always is giving satisfactory service. He has his wife and babies on the Mountain with him this summer.

Ole Hohnson moved to Cat Mountain for the fire season, July 1, and is on the job from daylight to dark. What Ole doesn't seein the way of smoke isn't there.

We have had four fires in this District to date. The first started from an Indian camp-fire and covered eight and a half acres of brush-timber type; the second was set in a pile of brush waiting to be burned later, near the Burkhead rancheria, and burned across about quarter of an acre. As the summer heat increased and things grew drier, however, fires became more serious, and on July 30 a fire originating near Purtymun's burned over 55 acres, only nine ofwhich were inside the Forest; however, and on the 31st a fire starting in the school section neat Power House #1 of the San Joaquin Light & Power Company spread for miles. Only a very little acreage of this fire was inside the Forest, and the Forest officers did not try to fight it except on the side toward the Forest.

The Deputy Supervisor spent July 14 and 15 in the Chiquite Basin and vicinity with Ranger Lofford. Their wives were with them however, so no serious scrap occurred.

The grazing for the first part of the season has been above the average and range stock is already getting into good shape for beef.

The Roberts timber sale is progressing nicely. $507.96 worth of timber has been cut, up to July 24, mainly fir.

Mr.Richard Merriman has just concluded one $100 shake sale and has another for a like amount of sugar pine.

H.Bogard is cutting on a $50.00 dead shake sale, and the S.J.L.& P.Corporation is cutting its second $20 firewood sale

for this season.

The resignation of Ranger Farley early in June put us badly in the hole on telephone line maintenance, but we now have the main lines repaired in good shape and most of the feeders. The old telephone lines in the high country built with solid ties -,brackets and insulators - were in very bad shape - the worst ever found with the opening of spring; while these build last summer according to the present standard were also considerably damaged, several having of the steel pins having broken off, and the insulators split either by frost or by the weight of snow and limbs. We found only two broken tree hooks. If the hooks are driven into trees with a slight downward slope so that the strain is lengthwise not crosswise, I believe they will all hold.

Placer Station is now a subsidiary switching station, the back country lines being cut-off at that point , and extension bells installed.

G..Joslin, a clerk before July 1, is now looking after the camps and fires around Crane Valley Lake. With his Irish green boat, he can skim from end to end of that lake -- says he can cut curves all around the other boatmen. That is all right for a summer job, but if half I hear is true, he will be wanted badly in the office when the fire danger is over.

The main Chiquito bridge which was constructed in 1909 is beginning to decay; the truss chords are about ready to drop, though the stringers which were cut from heart wood are still in fairly good shape.

Timbers for this bridge were cut two years before they were used, and although raised from the ground while seasoning, would, I believe, have lasted longer if they had been cut in the spring and put into a bridge the same year. The bridge will be repaired this summer.

Pine Ridge District.

Since the last issue of the Ranger, Claude K.Barker has been transferred from the Kings River District to the Pine Ridge and is in charge of the special use business at Cascada and Huntington Lake.

The value of the Sierra National Forest as a recreation ground is growing rapidly, as evidenced by the increased number of campers and tourists that are visiting this part of the Forest this season. Sulphur Meadow and the north shore of Shaver Lake are fully stocked with campers. The bass fishing in the lake has proved to be excellent. The popularity of Huntington Lake is growing rapidly and the fact that Mr.Huntington is taking such a personal interest in the promotion of the resort business in the lake region will tend to put confidence into the hearts of others who are in the notion of going into the resort business there. The increased demand for residence lots around the lake justifies the expense of surveying and staking out about fifty more lots. These lots will be run out within a few days of the writing of these notes.

Plans are nearly completed for the starting of work on a portion of the John Muir Trail that is to be built from Fish Creek to Muir Pass. The first project will be the construction of a bridge across Piute Creek. The trail for the greater part of the way between these points will follow the route of an old trail which will be repaired and brought up to standard.

The fire record, so far, looks very satisfactory. To date there have been but three fires, covering a total acreage of two and three eighths acres, two of them Class A. It is gratifying to note that there have been a good many tourists who have voluntarily complimented the Forest Service on the system of signs. There seems to be a general feeling of good will on the part of the traveling public as well as the users of the Forest, toward the Service. About 90 tourists have stopped to register between the 1st and 22nd of July.

The timber business in this District seems to be picking up in spite of business depression. Ockenden & Byxbee's mill will be ready to run by the first of August. The mill that they are putting up is an extremely fine structure, which goes to show that they are going into the business to stay.

Dakan and Hochderffer's tray mill, which recently burned, is being rebuilt by Messrs Dakan,Dunn & Smith, and they expect to operate practically the entire year, by banking sufficient tray bolts late in the fall to last them during the winter months.

Mr. B.B.Martin of the San Joaquin Light & Power Corporation recently visited the Huntington Lake and Tamarack Logging Units with a view of locating timber suitable for transmission poles. He seemed very enthusiastic over the prospect of getting suitable poles from this region at a very reasonable cost.

About the first of July, D.C.Birch and family moved to Shaver to assist District Ranger Price during the summer months.

District Ranger Price left for the back country in company with Supervisor Redington to look over the work to be done on the John Muir Trail, July 27, Ranger Boothe meeting them at Muir Pass to accompany the Supervisor through the Kings River District.

Kings River District.

The unusual late storms of May washed some of the roads and trails of this district somewhat, but benefited the grazing ranges greatly and increased the snowfall in the mountains for furnishing water for summer irrigation in the big Valley.

Trails in the lower portion of the district have been put in better condition than usual this year, and it is planned this fall to put in a system of water breaks on the steeper grades and places that wash badly, to try to reduce the maintenance cost.

An inspection of the Blue Canyon Insect Control Area by Mr.Hopping in May showed that while there is still a heavy infestation in that area, the work done in 1914, or the natural conditions, - probably both - have reduced the extent of infestation 65%. All infested trees were marked and given a number for future reference. Infested trees were also marked on a check area some distance from the control area, for the purpose of ascertaining if possible whether the control work is having any effect on the surrounding country.

Assistant Ranger Baughman was detailed to the Sugar Pine District for about a month from May 25, and reports that District Ranger Taylor believes in giving his men a chance to take sufficient exercise to keep them in good health.

Telephone repair work in this district was much heavier in the lower country than usual, but the lines in the higher country were in very good shape. For the first time since the line from Dinkey to Crown Valley was constructed, there were no breaks in the line wire, but of course a good many brackets were off.

District headquarters were moved to Dinkey on June 15, which is about a week later than usual.

Assistant Ranger Barker was transferred to the Pine Ridge District where he is stationed at Cascada. Both he and Mrs.Barker are greatly missed in this district and here's hoping that the attractions of the butterfly life at Big Creek will not make them forget entirely their friends and associates at Dinkey and Trimmer.

Considerable improvement in the construction of pasture fences is being made in this District. Where some of the fences were two and three wires with saplings for posts, they are being brought up to a four-wire standard with substantial cedar posts placed eight feet apart. It is planned to put two more stays between every two posts of at least one pasture fence this fall, to see whether or not the wire will stand the effects of snow and zero weather better when supported in this manner.

The cattle are all on their summer ranges, and over 3000 head were counted through Dinkey. The cattle that drift to the Crown Valley, Dinkey and Big Creek ranges which were not counted bring the total number grazed in this district this season close up to 5000 head. Ranges are in good condition now, and with a few summer rains this should be another good season.

The trail crew employed on the Grouse Valley Trail started back on June 29, and arrived without serious mishap, though it must have looked pretty serious to one of the burros while he was hanging by the pack rigging on the very brink of some falls in Cartridge Creek. Luckily the drift wood and pack rigging both held until a tow rope was gotten on to Mr.Burro and he was dragged ashore, a wet, sorry looking pack animal. Mr.Armstrong can also relate some interesting experiences that happened while coming over the snow on granite Pass. Too bad Mr.Ritter wasn't along to have written up the trip. Fourteen rattle bugs

were exterminated and plenty of fish were caught. The crew consists of six men including the cook, and two more will be added about August 1.

On July 9, Ernest Hoskins of Auberry started work on the Dinkey road with a crew of seven men and six horses. The money appropriated by the Fresno County Supervisors will have been expended by the end of this week, and all the pitches that give automobilists serious trouble will have been eliminated. Mr.Hoskins and his men are entitled to credit for having done a good job with a limited amount of money, and campers and stockmen that use the road will undoubtedly appreciate the improvement.

We were paid a visit last week by Mr.Redington and Mr. Godwin. Business in this District so seldom brings a man in from the Supervisor's or the District Forester's office that we certainly do appreciate it when they do come.

False hopes have already twice been raised that the remains of Louis Margolin's body had been found in Dinkey Creek. The first proved to be the bones of an animal, and the last, according to a report in the Fresno Republican has been identified as a man named Mark S.Nye, a traveling salesman of Fresno. The place where the skeleton was found is one of the most inaccessible in the mountains, and a person in distress in that vicinity certainly stands little chance of getting any assistance.

FORESTRY AND RELATED ITEMS OF INTEREST

The death of Dr.Holmes, Director of the Bureau of Mines, is a great loss to America. Dr.Holmes was long identified with the Geological Survay, his greatest work being in connection with mines and mining. In recent years he has devoted himself to making mines safer for the workers underground. A sketch of his useful life can be found in the New York OUTLOOK for July 17, in an item headed "Holmes - Hero". It will be remembered that Dr.Holmes was at Ellis Meadow with Mr.Pinchot in 1907.

It is with sincere regret that the members of the force of the Sierra will learn of the accidental death of John Murdoch Jr., last January. Murdoch came to the Sierra immediately after graduating from Yale Forest School, for his tryout as a field man. He was sent by Mr.Shinn to the Shuteye shake

camps of which there were a number in 1907. Camping at Billy Brown Meadow and going from camp to camp, marking timber, scaling and making cutting reports, at the same time he studied the problems of shake cutting from a scientific standpoint. Late each Saturday afternoon he usually showed up at the headquarters office at Ellis Meadow, bringing his sheaf of reports and eager for mail and for a few hours of companionship with his fellow workers. To the Service men who worked with him and to the shake makers his presence was always welcome.

The April issue of the Proceedings of the Society of American Foresters, from which the fact of his death is learned, states that after leaving the Sierra he went to the Black Hills National Forest, later to Wagon Wheel Gap Experiment Station, and in 1912 resigned from the Service to take up work with the Massachusetts State Forester in which position he remained until his life ended. Not yet 31, an able and enthusiastic member of his profession, his death marks a loss to Forestry in America.

Vol.13, No.2 of the Forestry Quarterly contains an article by Professor Roth on "The Formal Forest and the Actual Forest" that is especially recommended to the men of the Sierra . Not every teacher of Forestry can put the case as clearly as Mr. Roth does.

It was on the Stanislaus National Forest that a sugar pine was cut, in trespass, which scaled 18,933 board feet, and for which the Government has recently recovered $99.40 in settlement at the rate of $5.25 per M ft. B.M.

A much advertised story is the one by Hamlin Garland entitled "The Forest Ranger and the Woman" which is appearing in serial form beginning in the July 24 number of Collier's Weekly.

In a recent number of Recreation (May 1915) Forester Graves has a splendid article entitled "The National Forests and Wild Game".

The National Wool-Grower for April has a first-class article by Mr.Jardine on the "Possibility of producing more and better sheep by improvement in handling on the range".

It will be remembered that last year American Forestry" printed an article on the work of a Supervisor on a National Forest, written by Mr.Redington. At the same time, Mr.Redington

suggested, and later submitted, a series of articles on the work of various members of a field force, of which one, Mrs. Shinn's on the work of a Forest Clerk, appeared in the April issue of the magazine.

Allen S.Peck's article on "Protecting the National Forests from Fire", printed in "Safety Engineering"for April is both timely and full of suggestions.

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*In charge Forest exhibit, Panama-California Exposition.

EDITORIALS

The Fire Situation In another part of the RANGER is given a summary of the essential facts concerning the fire season just past. Several stand out significantly. The decrease of man-caused fires points decidedly to the value of cooperation and publicity. The hearty help received this year from settlers and users has enabled us to reduce our prevention expense by $4000 from last year's figures, and our suppression cost has dropped from $2300 to less than $700, which includes rangers' time. In one of the worst potential fire seasons we have ever had, the situation has been handled by a force less by 25 men than the average number of men employed annually in the preceding five seasons. The fire-line along the western boundary was used with remarkable success in the Mariposa District for ten miles of its length, as a base to backfire against flames which came up against the Forest boundary in a solid front. Our report time of one minute and six seconds per fire showed a decrease of seven minutes and fifty-four seconds from last year. The average travel time was 44 minutes as against 71 minutes in 1914, and the distance traveled was 5.5 miles as against 4.8 miles of the year before. The rate of travel was one mile in eight minutes as opposed to one mile in fifteen minutes in the previous season.

An estimated area of 125,000 acres was burnt over just outside the Forest boundaries. This, compared with the odd four thousand acres of the same class of cover which were allowed to burn over inside (because of the small value of the Government property threatened), shows clearly the benefits of organization and cooperation. Looking back, we can say that we are not ashamed of the record, because it spells progress. To the ranger, lookout and fireman force the greater credit is due for the splendid results.

Quick Business. On August 16 the Supervisor was informed by a lumber company operating within the Sierra Forest that because its annual cut was showing a shortage over the estimates on its private lands, certain Government timber to the amount of approximately four million feet was desired to enable the company to complete its

stipulated cut at one of the camps. On August 17 the Deputy Supervisor went over the area with officials of the company. On the 18th the facts were wired to San Francisco. On the 19th an emergency sale was approved and money deposited, and by August 24, one week after the examination of the area, all the timber - 4,400,000 feet - had been marked, chutes laid in a portion of the timber and felling had commenced. The cutting was completed about October 23. The operator informed the Supervisor that in no private deal of the size could he hope to get things done with the celerity which marked this transaction. The strand of red tape in this case was a very inconspicuous ribbon.

Criticism. The use of proper criticism at the proper time and in a tactful manner is one of the best aids one has in securing better future results. It must be constructive, and conveyed in such a manner as not to antagonize those at whom it is directed. Oftentimes an officer does what he thinks is a good piece of work. The superior officer visits him and though appreciating the soundness of the basic principle which led the man to do the work, sees defects which had not occurred to the performer. If commendation is given to the subordinate first, for his accomplishment, and then tactful suggestions are made concerning the defects, all well and good. Both officers part as friends, the defects in the particular job under discussion will undoubtedly be remedied, and future mistakes of the kind will be avoided. If, however, the superior officer jumps the man for the defective work without giving him commendation for the bigger thing (of which naturally the man is proud), trouble starts right there. We all know what it leads to, in misunderstanding and discouragement. The good work of men of loyalty, honesty and industry far outweighs the poor work, and it behooves every man acting in a supervisory capacity to remember this and to deal with his subordinates with patience and kindness and tact. Remember that commendation for a good deed warms the heart of the doer and that criticism delivered without rancor or impatience and with a full sense of the relation of the thing criticised to the other work done, is up-building and leaves a good taste.

Acknowledgement — We acknowledge receipt of the Coconino Sevier and Cache "Rangers". These contain much of value and will go the rounds of the men on this Forest.

Gossip. — Defined by Webster as "To tell idle or mischievous tales; tattle." It is commonly found where people, two or more, are gathered together. It is encountered most frequently in small communities where, by reason of the sporadic visits of its greatest enemies -- work and a sound altruistic conversation -- it leads a most thrifty existence. Its sire is idleness and its dam is a mind unoccupied by unselfish thought. It is a parasite on those human beings who ponder but little on the consequences of an unkindly or spiteful word. It begets trouble and again trouble; its wake is followed by misunderstanding and recrimination and there is no good in it. Extinction is decidedly advisable but only possible by personal disassociation with it and by disapprobation of it when encountered among others.

CONTRIBUTED ARTICLES

Forestry Meetings at the Panama-Pacific International Exposition.

by

Paul G. Redington.

Probably at no time in the past have so many American Foresters assembled outside of Washington as were in attendance at the meetings at San Francisco on the Exposition grounds during the week beginning October 18. All portions of the country were represented and private, state and government foresters were present.

On the first day, the Society of American Foresters held three sessions, the first two being devoted to papers and talks concerning the American Forester, his ideals, his opportunities, and the relations existing between him and the lumberman. These were open meetings, while the evening session was a banquet attended by members of the Society, at which many points concerning the conduct of the work of the Society and its future plans were discussed at considerable

length.

On the second day, the Western Forestry and Conservation Association held its regular meeting, and some splendid papers dealing with the work of that association and results accomplished in its fire protective and publicity campaign were read.

On Wednesday a joint meeting of the American Forestry Association and the Western Forestry and Conservation Association was held, and on Thursday the series of meetings was concluded by a session of the Pacific logging congress.

Foresters and visiting lumbermen were at various times the guests of the San Francisco lumbermen, at luncheon , and at an elaborate banquet at the Commercial Club. Throughout the meetings there was apparent a spirit of cooperation between foresters and those interested in lumbering and fire protection, and the trend of the meeting was decidedly of a constructive nature. It was regretted by everyone that Mr.Henry S.Graves, the Forester, could not be present. His paper dealing with the relation of the Government to the lumber industry was read, however, and was received with much interest.

Those who arranged for the meetings are to be congratulated and should be highly proud of the success attending their efforts. The Proceedings of the Society of American Foresters and the lumber trade journals will all, undoubtedly, contain extended reports of meetings.

The Sierra was represented by ex-Supervisor Shinn, Deputy Supervisor Jorian, District Rangers Wofford, Price and Taylor,and the writer. A man who took a prominent part in the meetings was H.D.Langille who years ago was well known on the Sierra as an Inspector.

Meetings of this kind cannot help but add considerable impetus to forestry, and should aid in widely extending the cooperative spirit which already exists between foresters and lumbermen.

The Fire Season at The Pines
by
George F. Leslie

The season at The Pines, from a fire standpoint, has been a most successful one, there having been no fires in that vicinity, although the number of tourists has far exceeded that of any previous year. From a publicity view we also trust the season has been a beneficial one. The registration at The Pines resort, from May 1 to September 30 inclusive, was 956. During July, August and September the number of guests was 575 of which number about 120 had registered more than once. The number of visitors registering at the Fireman's Station near The Pines during July, August and September was 374. To practically all of these the folder maps, campers' hand-books and game cards were furnished, in addition to information concerning the Forest trails, fishing and hunting and other items of interest. One party even asked where angle worms for fish bait could be found, and we were lucky enough to be able to inform him.

The great majority of the campers around Bass Lake and guests at The Pines were from the San Joaquin Valley, and all were decidedly of the opinion that the general public had received great benefits through the Forest Service, in the way of making the back country accessible to tourists by means of trails and trail signs, by fencing off pastures for tourist stock, by protecting game, and most important of all, by protecting the forests from fire. Also many of them remarked on the easy access to the outside by means of the Forest Service telephone lines.

Many and all sorts of questions were asked, some of which to an outsider would perhaps appear to be almost superfluous; but they were not, for it was evident that they were after real information.

The manner of locating fires was one point of great interest, and several people spoke highly of the exhibit at the Fair. Timber sales, the manner of marking, the disposal of brush, protection of reproduction, etc., the forest homestead privilege and the cruising of timber all came in for their share of questions. Some were more interested in the amount of timber in the Forest, how it was cruised, the amount of cord-wood, the grazing facilities, etc. All, however were thoroughly in accord with the system of fire protection.

The Value of a Ranger's Wife
by
Julia T. Shinn

A pretty important question this, on the Sierra where all the permanent force, the short term men and a majority of the summer guards are married men and know by this time that their wives can make or break them, so far as the Forest Service is concerned.

Perhaps under no other circumstances is a wife so important a factor in a man's success. In town, a mechanic, a teacher, a clerk, even a doctor or a minister can do good work and live his business or professional life out without his associates knowing whether he has a wife or not. But in a Forest she is a part of the game, or if not the game shortly comes to an end, for no woman can live happily away from all other interests if the one vital interest in her husband's life has no value for her. A discontented wife inevitably forces a ranger's resignation.

On the other hand, if she, too, realizes that the establishment of the Forest Service was one of the biggest things ever done toward a fine socialism -- a work by the Nation as a whole for the good of its future population --; if she realizes that upon the smooth running of the many small wheels in the organization depends the effectiveness of the whole machine; if she remembers that even one woman's attitude toward the Service in which her husband has a part counts, in the community where she lives, she can be of immeasurable help. If her attitude is right, she need not do a thing, though of course we all know women who do.

There was the ranger's wife who always let her husband go to a fire as quickly as he could saddle his horse, while she got provisions and a couple of feeds of barley on a pack horse, to follow if he were not back within a few hours. There was another one who kept run of the many free use permits issued by her husband, and when he was in another part of his district marked the posts or measured the cord-wood so that the applicant need not lose time waiting. There are the many wives who answer telephones and write down memoranda of messages to be given their ranger men when they return to the cabin; type-write reports and copy maps; paper a room and put up shelves when the improvement funds for the cabin have been exhausted; answer Forest letters when their men are in the "high country" and some applicant for a privilege wants information at once. The Sierra is full

of such women and of fragrant memories of others like them who have gone elsewhere.

Alas for the Sierra, there have been a few of the other kind. There was the one that refused to go to bed if her husband was away over night, and so was a nervous,hysterical wreck when her ranger got back, dog tired, from his fire. There was the one who could not resist repeating bits of official information that she knew were not supposed to be repeated, just to show that she knew things. There was the one who tagged her husband, a drag on his efficiency, because she was so lonesome at home. There was the one who was too self-appreciative to associate with other Forest women. There was the one who was so "pison neat" that the Forest users planned to do their forest business with the ranger as the chance came, along the trails, rather than risk the slight frown that a muddy footprint brought, or the shaking rug that followed a visit before the visitor was out of sight. There was the woman who thought her husband wasn't appreciated or given a chance or a rise in salary that he deserved, and so kept him discontented. Notice the past tense. They have all in time brought about the resignation of their husbands from "the finest thing in the world" -- sometimes the loss to the Service of a most effective man.

For those of us who are left, there remains the high faith in the Service and its value, in the rangers and their work. The old poem that was dinned into our ears when we were small holds good as applied to this Forest work. You remember the lines:

"Who sweeps a room as to Thy law
Makes that and the action fine."

Just as truly, who lays a pipe line, or mends a trail, or stretches wire as to the great law of social service as carried out in the Forests, has done something worth while. And the wife who rests him when he is tired, helps him when he is busy, sympathizes with his ideals and his ambitions for his district, is of inestimable value - his "friend and fellow-worker".

The Present Status of our Insect Control Work.

by

Dwight C. Birch

The problem of controlling our tree-killing insects is by no means solved yet. Just at present there is being carried on an intensive study of the areas that have thus far been worked, to find out the effect of the work that has been done, and to see what will happen if no more work is done on them for several years. Other check areas amounting to about 3000 acres have been established. On these areas there has never been any control work done.. The object is to count, each year, for four or five consecutive years, the number of trees killed by insects and the volume of timber lost thereby. An accurate map is made of each check area and the location of the infected trees is marked. Each infected tree bears a designation. This map will give us valuable data as to the nature of the progress or spread of our infestations from a given center.

The results thus far show that an average of 35 merchantable trees per section of land is killed each year. The average volume per tree is conservatively 1000 feet b.m. This is a loss of approximately 55 feet b.m. per acre, and for our entire pine type represents a loss of fifteen million feet annually. Figuring the stumpage value at an average of $2.00 per M feet b.m. - which is low for our pine, our annual monetary loss through insects is $30,000 . This loss is silently going on, and from our past experience promises to continue until we reduce the infestation by main force.

Six Months at the Panama-California Exposition.

by

Ernest G. Dudley

Did you ever travel in southern California when it stormed ? If you did, you learned that you were in "exceptional weather conditions." Mrs.Dudley and I arrived in San Diego during such a period. No one knew that exactly fifteen years before I had entered that city with just such a storm at my heels! If only people would take forestry and conservation as seriously as southern California does her climate!

But as to my work here, yes, I've had a snap. My hands are so soft that one minute on the fire line would put me in the hospital. I said snap - if you consider lack of exercise a snap. My first three months was spent in learning how to go at the job in front of me. I had to attract the attention and hold the interest of visitors. The point was how to do it. I woke up nights telling a big crowd of four or five people how we fight fire and why the Forest Service is a necessary part of the National Government.

It worked out into a study of human nature, and when I learned how to take people of different types, I found how to hold their interest. Kipling has a few verses entitled "Ladies", and each verse ends :"and I learned about women from 'er." I learned about man from 'im and 'er.

My first education came at the hands of a rabid conservationist. His indignation because we sell timber and allow grazing was intense. It took me an hour to convince him that forestry is a business and not a sentimental proposition.

A fond mother brought her son in to me to talk forestry and art as a business -- catch the art -- and when a new Forest Assistant appears on the Sierra who wishes to paint half the day and study trees the other part of the day, and live in a log cabin meanwhile, you will have that son with the artistic soul. His mother says he must have a dignified profession and that the rangers' life is "so poetical" - emphasis on the so.

The next encounter worthy of mention was with an Oregon lawyer. What a grafter I felt like before he got through with me! "The curse of the West is paternalism", he said. "Give the forests and waters to the states, so that they can be developed." I waited patiently for fifteen minutes, simply because I couldn't get in a word edgewise. Meanwhile a little crowd collected, scenting a fight or an argument, I suppose. I attempted to answer a few of his statements, but he became as belligerent as all Europe. Immediately several allies volunteered support of my cause, but remembering President Wilson's plea for strict neutrality I managed to avert hostilities. By this time our states rights man severed diplomatic relations and took his passports.

These little anecdotes simply illustrate a bit of the day's work. I have been forced to read up on my geology, botany, and especially on the economic history of the country. The county buildings especially have been sending

visitors to me when their questions become too deep. I have explained the formation of petrified wood over and over, because a piece of it in the San Joaquin Counties building interests people into asking questions and Mr.Safford of Fresno or Mr.Griffin of Madera send the questions to me.

Personal anecdotes have been numerous. One young lady exclaimed: "I am just crazy about Forest Rangers; I love those darling buttons so!" She asked me where I was from, and I told her all of the rangers on the Sierra were married.

Another said : "I have been spending the summer at Jerseydale and know the rangers so well." I asked her if they were married on the Sierra. She said "Oh, yes; but they are awfully nice." -- Suspicious. Suspicious. How about it, Mariposa District ?

Another time I was told that the Forest Service had taken ranches for ranger stations near Northfork, Madera County. Yes, I learn a lot every day.

The Dudley Motion Picture Company (not related) is producing a film with the hero a ranger. My august advice was asked concerning the clothing - when done and thus not to be changed -- and I am invited to attend the first production and censor it.

Mr.Roosevelt, Mr.Taft and Mr.Bryan have all been in. "Teddy" showed much enthusiasm over forestry.

I will trouble you with only a few lines more and these lines will be in regard to the interest displayed in forestry by woman. She is an inquisitive character, you know, and she comes in here browsing around for knowledge about her country and its government. Quite often she drags Mr.Husband along. She meekly asks him what my erosion model is. "Oh, that's a new way of irrigating" says hubby. But the inquisitive wife holds back and gives me a questioning look. I let Mr.Husband down as easy as I can, but the flash of spirit in inquisitive wife's eye suggests to me that women who want the ballot are going to vote as they think best, and my experience here, meeting them from many states, convinces me that we want to interest women in forestry, then give them equal suffrage and we will get more support for our work. The first is easy - I have given twelve women data for preparing papers to be read before women's clubs and they are all intelligently interested. The second -- well, I am not in politics.

This is a short story of my summer's work. The smell of the pines, the smoke of the fire line, and ordinary forest work has not been in my lot. I have not caught a trout or fried a bit of bacon over an open fire, but on two Sundays

I have gone out on the briny deep and braved "mal de mer" for the fun of catching yellow-tail, barracuda and Spanish Mackerel. Last trip four of us caught twenty-three big fellows and I was honored with eight. The largest weighed 23 pounds and fought 21 minutes before it was landed. When you come to San Diego, don't miss that sport. You forget your troubles and become ten years younger.

1915 Fire Statistics
compiled by
George P. Leslie.

Fires and Causes:	Campers	3
	Lightning	4
	Brushburning	5
	Incendiary	1
	Railroad	1
	Miscellaneous	5
	Unknown	14
	Total	33

Proportion of Class A fires	57½%	
Total acreage burned, outside(est.)	125,000	
" " " inside	6,308	
Average acreage per fire, inside	191	
	No.	Acres.
Timber fires, National Forest Land	11	61½
Average 5½ acres		
Brush fires , National Forest Land	*14	4047
Average 282 acres		
Timber fires, private land, inside	3	160
Average 53 acres		
Brush fires private land inside	5	2038
Average 408 acres.		

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*Of the acreage burned over inside of the Forest, eight fires, covering 6135 acres were allowed to burn until it was seen that valuable property was threatened. They were then stopped with but little expense. This leaves 25 fires with an average of 7 acres per fire for the season up to date.

#Three of these brush fires extended to private land inside.

Damage to Timber land, National Forest,	15.00
" to forage " "	49.40
Total	64.40
Average damage per acre	.0157
Damage to private land inside,	250.00
Average damage per acre, private land	.114
Total Cost, National Forest Fires . . .	$535.84
" " Private land, inside	138.49
Total	674.33
Average cost per fire	20.43

On eleven of the fires, where accurate data was available, the average report time was 1 min. 6 sec.; the average travel time was 44 minutes and the average distance traveled was 5.5 miles.

The decrease in the number of man-caused fires under last year's figures was 27.

At the present writing, October 30, the fire season is not yet closed, it being the longest season on record.

HEADQUARTERS NEWS

Deputy Supervisor Jordan went north on August 14 for a general reconnaissance of the Mariposa District. While he was there, the Madera Sugar Pine Company sale was negotiated, and he went over the area, telephoning in the necessary information. After completing the other work he had planned in the district, Mr.Jordan returned to Northfork on August 25.

On August 25 a telegram was received from Grazing Inspector Douthitt stating that he desired to go over the back country ranges of the Sierra. Reply telephone directed him to proceed to Big Creek where Ranger Price met him and started him back on a two-weeks trip.

Supervisor Redington left the Ellis Meadow Camp on the morning of August 28 for a trip over a portion of the Muir trail route, to inspect work done this season in the French Canyon unit and to plan for next year's work further north. His way took him south to Muir Pass and north to Isberg Pass. Incidentally he observed the condition of the grazing ranges, trails, sign work and other high country forest activities, returning after a very strenuous trip on September 15.

During the Supervisor's absence - on September 3 - the headquarters office was moved back to Northfork for the winter. So often has this process been gone through with that it caused scarcely a day's interruption of office work.

On September 5, Deputy Supervisor Jordan drove to Auberry to meet Mr.Hodge of the District Office who was on a fire protection inspection trip. Mr.Hodge spent the next day, Labor Day, in the office in the forenoon, going over sign work with Mr.Jordan and in the afternoon went to Crane Valley , on the Pines truck, to visit Fireman Leslie's Publicity Bureau and sign-making shop. He left this Forest the next morning.

Mr.E.R.Davis of the Pacific Light and Power Corporation came from Fresno to Northfork in the course of a trip from Los Angeles to San Francisco, in order to see Supervisor Redington and go over with him the details of the desired extension of time on the work at Big Creek.

Deputy Supervisor Jordan started September 18 for his

last trip of the season into the high mountains. His course took him to Clover Meadow, Reds Meadow, Fish Creek Valley, Crater Creek and other points in the watershed of the North Fork of the San Joaquin, mainly on grazing range reconnaissance, though partly on general inspection and on Muir Trail route lookout. An early snow caught him one night; he had the pleasure of helping put out two lightning-set fires, caught all kinds of fish and had a miscellaneous lot of other experiences in the course of his duty.

On October 5, National Forest Examiner Hopping reached Northfork, ready to go over the insect control areas. Forest Examiner Birch rode across from Shaver the same day and met Mr.Hopping at the Forest office. Together they started for the Chiquito and Rock Creek areas the next morning, going thoroughly over the area worked this spring, the area partly worked and adjoining areas not worked at all, for comparison. They returned by way of the White and Friant insect control operations, reaching Northfork on the night of October 14. They noted that the White and Friant light burning done in connection with insect control seemed to have been especially disastrous to pole and sapling stands of sugar pine. Possibly if this burning had been done more carefully -- in small areas at a time, less damage would have been done than is now apparent on the approximately 2000 acres burned over.

The emergency sale of approximately four million feet of timber to the Madera Sugar Pine Company, on which marking began August 22, is now closed. This sale brought something over $12,000 into the United States treasury. Sale conditions have been carried out by both parties to the contract with so much care that no delays and but very little friction have occurred. To be sure one complaint was made, when on September 13 the Manager for the Company telephoned in that the scale was over-running the mill tally by ten percent, but when Lumberman Elliott check-scaled carefully, and went over all the scaler's and tallyman's figures, it was found that the scale had underrun about two percent, as the Decimal C usually does. Even big companies can make mistakes. Only "Uncle Joe" is infallible.

Returning from the trip to Sugar Pine to meet Mr.Elliott, Supervisor Redington was riding toward Soquel to visit the new shingle mill that is to work up the old down redwood , and stopped at Crane Camp to call up the headquarters office. This was fortunate, as there was a telegram just received ask-ing him to meet the District Forester and Supervisor Patterson of the Sequoia at Fresno, for consultation on Forest matters. Mr.Redington therefore rode back to Sugar Pine, arriving in time to go to Fresno with E.H.Cox in his auto.

The demand for grape-stakes and tray shakes is now good. Many free use permits and small timber sales have been made for grape stakes, and the tray mills report a lively market for their product. Split stakes and vertical-grain tray boards are winning big favor among the grape-growers. This is due to their greater strength and durability. The interesting thing behind this demand for stakes and trays is the fact that the Associated Raisin Company has been shipping immense orders of raisins to Europe.

The fire folder map, of which hundreds were distributed this summer, has been amended for next summer's edition, the map being changed by the addition of new trails and public pastures. A conspicuous symbol will distinguish all public pastures, and another will be printed on each ranger station. The printed matter will be changed by the addition of some material and by the change of game laws to bring them up to date.

During the month of September the Fish and Game Com-mission planted 26,000 Rainbow fry in the Northfork, above Bass Lake, and 100,000 each of Rainbow and Loch Leven fry in the vicinity of Big Creek and Shaver, where the disposition was as follows:

Stevenson Creek	6000	Rainbow
Bacon Creek (which feeds Shaver Lake)	20000	"
Balsam Creek	4000	"
Alder Creek	2000	"
Pitman Creek	4000	"
Home Camp Creek	40000	"
Huntington Lake	24000	"
Huntington Lake	100000	Loch Leven

It will be noticed that the planting has been done most extensively in the region of our resorts where the fishing will be enjoyed by the greatest number of people. The value of the Forest for recreation has been greatly increased by the planting of these 226,000 fish.

Because of various changes and readjustments in the agreement between the San Joaquin Light and Power Corporation and the Government, no charges had been paid by that company for its power propositions, nor had final agreement been signed until this year. On September 1, however, payment was made of accumulated charges amounting to $5,995.24 and on September 14, permit was issued covering the entire power project -- reservoirs, conduits, power houses and transmission lines -- operated within the Forest by the San Joaquin Light & Power Corporation.

On September 23, a letter was written in the District Forester's office asking this Forest to forward a small quantity of the foliage and fruit of Pinus sabiniana to the University of Toronto. Ranger Mainwaring was asked to obtain the specimen, and he cut the top from a young Digger pine. The specimen held four perfect and mature cones, young cones about two inches long, staminate flowers, and bright healthy foliage. Prof.White of Toronto, in acknowledging the receipt of the shipment writes:"This specimen arrived in splendid shape. Please allow me to thank you most heartily for your courtesy in this matter. It is, indeed, a splendid specimen, and probably one of the best museum specimens in existence."

The year's work on the John Muir Trail, an appropriation for which was made by the State of California last winter has been completed. The sum of $3250 was allotted to the Forest by the State Engineer and it was all spent. The crew on the Middle Fork of Kings River in charge of Sylvester Dahl and working under the general direction of Ranger Boothe has progressed steadily through most difficult territory toward the mount of Palisade Creek. The northern crew in Ranger Price's district completed fifteen miles of trail from Muir Pass to the mouth of Evolution Creek on the South Fork of the San Joaquin River, and placed in commission a fine suspension bridge across French

Canyon near its junction with the South Fork. Next year, if funds are available, it is hoped to complete the trail from Palisade Creek up the Middle Fork of Kings River to Muir Pass and to start in on the trail from Blaney Meadow over Selden Pass and down Bear Creek.

The uniform committee recently appointed by the District Forester, after having ascertained the sentiment of the field men on the question, held meetings in San Francisco October 18-25. Ninety-six percent of the odd 325 field men heard from favored the wearing of a uniform. The committee made its recommendations concerning the kind of uniform to be adopted, and adopted rules for its wear. This report will soon be sent to all the field men.

It will be remembered that the last number of the Ranger called for a good fire picture for the cover illustration of this number. The most striking one received was from Ranger Boothe . The fire, while not serious, was a wonderfully picturesque one. It occurred in the canyon of the Middle Fork of Kings River, when Boothe and the Supervisor, finding the temperature much lower than had been anticipated when bedding for the trip had been selected, built a camp fire in the night and were later wakened by the brilliant light caused by the flaming up of a white-barked pine (P.albicaulis) to whose foot their fire had crept. Boothe had enough presence of mind to photograph the blaze before making it safe.

The registration at the ranger stations this summer totaled 1437, the largest number being 374 at Mr.Leslie's camp near the Pines, and the next largest at the Signal Peak Lookout to which guests at Wawona sometimes climb. All of the men keeping registers report that the traveling public was glad to register, feeling that in that way they might be more easily located if anything important happened at home.

The total registration at the hotels within the Forest where people stay for some length of time, was approximately 4000. In addition there was a registration of about 20,000 at Miami Lodge and Wawona, mainly transients on their way to or from Yosemite Valley but seeing something of the Forest where the stage roads go through as fine timber as there is on the Sierra.

DISTRICT NEWS

Mariposa District.

The new log cabin at Murphy Station is about completed and it will be a big improvement in that part of the district. We have also finished a seven-acre pasture in this neighborhood of three plain twisted No.12 wire strands which will be very useful to us.

The stockmen on the Granite Creek and Merced ranges have completed a pasture fence at the Duncan Meadow to hold their stock while gathering in the fall. At this early date, they do not see how they ever got along without it.

For our Signal Peak water tram we have an eleven gallon galvanized bucket, a new car, a larger drum and gear wheels, so the worry about water at this lookout is a thing of the past.

The stock coming out of the back country ranges is looking extra good and the stockmen are very much pleased with their condition.

Up to date we have had fourteen permitted fires this summer in the Mariposa District, controlled by the Fire Protective Association. They have done excellent work. We expect to have more of these fires if the weather continues dry.

Sugar Pine District.

The fire season is practically closed for 1915, and with very little damage, if any, done to timber in this ranger district. Only one fire occurred on which money had to be expended for temporary fire fighters and supplies, and in that case the expense was only $8.00. This was necessary for the protection of the lookout tower on Deadwood peak as the fire occurred after Mr.Gray, the lookout had been released.

One small fire was located and put out on Green Mountain on September 21, which from all indications had been started by lightning .

The construction of the Chiquito Bridge on the Mammoth trail is well under way, and rangers Taylor and

Clark expect to have it finished by the time this goes to print.

Ranger Taylor has just returned from the big Fair at San Francisco where he and Mrs.Taylor have been for the last ten days. Mrs.Taylor stopped over in Madera to visit friends, on the return trip.

The Madera Sugarpine Company has closed down logging operations and will close the mill for the winter on Nov.1. The Forest Service had the pleasure of selling them over four million feet of timber on which they finished their season's cut. Bill Parkinson was the efficient man in charge of the sale.

The small shake mill working on down timber -- large logs left by the original lumbermen -- in the Fresno Big Tree Grove, has turned out some of the best shakes and shingles that have ever been made on the Sierra.

The Adams Mill -- officially the Ahwahnee Saw Mill -- at the head of Crane Valley, has had a very successful run and is moving to a new site to finish up its orders. This mill is operating almost entirely on small timber sales under Regulation S-22.

Northfork District

The fire situation in this District is practically the same as it has been during the midsummer months, the only favorable change being the cooler nights.

The average monthly temperature for the summer months on Shuteye has been as follows:

August, 72-1/3 degrees
September, 61-2/3 "
October 59 "

On account of the damage done last winter to the tank on Shuteye, four trips have been made to date with water for the lookout man. Mr.Henry's analysis of the water from the Billy Brown Meadow spring shows that it is excellent, but he makes no mention of the hill.

The last handful of snow disappeared from Shuteye by August 4, and owing to the shortage of water, Mrs.Henry and her children were compelled to move back to Northfork on August 21.

August 17 to 20 Rangers Wofford and McKenzie were on Shuteye getting out the timbers to be used as cribbing for the new water tank which will be installed on the mountain early next year. All material is now on the peak and we hope to be able to insure the Lookout an abundant supply of snow water for the summer of 1916.

Cle Johnson, the Oat Mountain lookout man, moved down on September 30; Guard Herrick was let off duty September 27.

Rangers Mainwaring and McKenzie have just completed their post work on Peckinpah Ridge. We now have 1000 posts for pasture fence repairs on stations in the vicinity of Northfork, besides posts and rails for a new cross fence at Ellis Meadow to replace an old one of barbed wire and boards now in use there.

A number of free users are busy hauling their shakes and posts down the mountain. The growing demand for free use posts has forced some of our patrons back as far as the Shuteye Tray Mill.

The Shuteye Tray Mill closed down about the middle of August because the tray market seemed weak. Since closing however Mr.Roberts has disposed of all his trays and says he could easily have placed several car-loads more.

The Logan bridge across Chiquito Creek has been repaired. Within the next year or two it will be necessary to replace the old pine stringers with cedar ones. The bridge was constructed in 1910.

Most of the stock is out of the back country, and reported as coming out in good condition.

Work on the Merriman shake sale and on the sales of dead shakes to Bogard and to the Stout brothers . . is about completed.

Pine Ridge District

Since the last issue of the Ranger there has been a great improvement made in the back country trails of this district. The Muir Trail has been completed from Muir Pass to below the mouth of Evolution Creek on the South Fork, and a good cable bridge has been built across French Canyon. The Kaiser Pass - Lower Hot Springs , the French Canyon and other main trails have been repaired.

The Ockenden-Byxbee saw mill has closed down for the winter. This mill was constructed this spring and cut a little more than one million feet of lumber during its short season. Lumberman J.C.Elliott inspected this sale in October and did some check-scaling. On the 127 logs so scaled he found a difference of only 4% between his and the scaler's figures. Mr.Elliott commended the scaler as also the management of the sale inasmuch as he found no merchantable timber left in logs and tops, no avoidable damage done to timber left standing or to second growth, and the brush carefully and safely piled.

The Dakan and Hochderifer mill, destroyed by fire this spring, has been rebuilt and will probably run all winter, under the new management known as the Big Creek Tray and Shake Mill.

During the summer a fine tower has been completed on Baldy, built on the plan outlined in the Fire Protection Manual . Lookout Parker now has unobstructed vision in all directions.

There has been a large number of special use permits issued this summer for residence lots at Huntington Lake and vicinity. All the lots at the Lake were resurveyed and field notes kept so that in future there will be no difficulty in relocating missing corners.

One hundred cans of trout were planted in this district by the Fish and Game Commission this summer, eighty-eight in Huntington Lake and its tributary streams and the rest near Shaver.

We have been exceptionally fortunate this summer with fires, having had no large ones and but few small ones.

Forest Examiner Birch and family have returned to Northfork from Shaver where Mr.Birch has been stationed this summer.

Assistant Ranger Cathey and wife left Shaver on October 12 for Mariposa County.

Firemen Charles Mercer of the Shaver Ranger Station and John Dillwood of Jose Ranger Station have gone off duty because the fire season ought to be over. Lookout Parker came down from Baldy for the winter on October 16.

District Ranger Price and wife left October 16 for San Francisco where the visited the Exposition for about ten days.

Kings River District.

Supervisor Redington visited the Kings River District early in August, and,accompanied by District Ranger Boothe, inspected the work being done on the Middle Fork section of the John Muir Trail. This is undoubtedly the hardest piece of trail construction yet undertaken on this Forest, but the scenic attractions that will be made accessible to the public on the completion of the trail are certainly worth the seemingly high cost of construction. Mr.Redington took some beautiful photographs while on this trip that prove this statement without further argument.

The wire was not stretched up at the Crown Rock public pasture this year, but the posts are set and the wire on the ground ready to be stretched the first thing in the spring. The wire was left up on one of the pastures at Dinkey with stays between the posts making the distance not more than 2½ feet between supports. If this experiment proves satisfactory in keeping the snow and zero weather from slacking the wire, we will be able to profit by it in the construction of public pastures in the high country.

While hunting with a man named Charles Campbell, of Reedley, Ned Baird, one of the trail crew, accidentally shot and seriously injured Campbell. The bullet struck Campbell's rifle barrel and exploded, several of the

fragments entering his arm and leg. A doctor from Big Creek went in and administered first-aid treatment at Island Camp where he met the trail crew carrying the injured man out to Dinkey on a stretcher. Only one who has helped to carry a man on a stretcher over a mountain trail can imagine what a job it is to carry him fifty miles over some of the roughest trails in the Sierras.

District Ranger Boothe accompanied the Samples while they gathered their cattle from the Blue Canyon Range in September, and the only fire in the Kings River District to date was put out while on this trip. It had burned over about ten acres near Tehipite Dome. This was a lightning fire and had evidently been burning slowly for two weeks or more.

R.S.Armstrong reached Dinkey on October 10, on his way out from the trail camp where he had been cooking for the crew. He had not been feeling well for some time, so concluded to come out with some friends who happened to be coming through the Middle Fork at that time. The rest of the crew was brought out by Ranger Boothe on the 18th, and most of them were pretty glad to get out. Three to four months in a camp with only a half dozen or so visitors gets to be an old story with most of us.

The new tool-room and office building at Dinkey Station is about completed except for the shingle stain. There is a basement underneath, about 10' x 12', to be used as a store-room; the tool-room in the back is fitted with a work bench, and there is a place over the office room for fire tools. We are trembling in our boots for fear the Supervisor will confiscate this office and establish his own headquarters here when he sees how classy it is.

Once more the semi-annual moving act has been completed and we are settled at Trimmer but it doesn't look much like winter down here yet. The well is dry and if it doesn't rain pretty soon, it looks as through the river might also go dry.

FORESTRY AND RELATED ITEMS OF INTEREST

During the summer Forester Graves visited the Alaska Forests.

It is with pleasure that the name of E.E.Carter is again seen in the Field Programs. Mr.Carter left the Service some years ago to teach in the Harvard Forest School but returned to the Washington office this summer.

Volume XIII of the Forestry Quarterly contains an article on hardwood planting in the Owens Valley, by L.E. Larsen. The lack of hardwoods on this coast is so great that anything on the subject is of especial interest.

This year sees the opening of the first School of Forestry in China as a Department of the University of Nanking, with three Chinese graduates of American forest schools as instructors.

Permission has been given by the Secretary of Agriculture to P.G.Redington and C.L.Hill to publish privately their "Useful Hand-Book".

Bulletin 243 of the Department of Agriculture on Cone Beetles and their injury to sugar pine and western yellow pine, is written by John M.Miller, well known on this Forest where he was a ranger before his transfer to the Bureau of Entomology. A number of copies of this bulletin have been requested for distribution to the Sierra's district rangers.

The California Agricultural Experiment Station with headquarters at Berkeley has issued a bulletin on "Irrigation and soil conditions in the Sierra Nevada foothills" which should be of value here.

"California's Magazine" for July contains a number of articles on forestry, including one by District Forester DuBois on the National Forests of California.

"North Woods" for August has an article by W.T.Cox on "Aerial forest patrol", and the "National Monthly" for August has one on "Sinecures in the Forest Service". Both these articles cover unknown territory and should be of interest.

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THE SIERRA RANGER

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Northfork

California

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Kings River District

Roy Boothe	Forest Ranger in Charge	Trimmer,	"

EDITORIALS

The Annual Estimates and Analysis of Diaries.

On all the National Forests of California during the months of January and February the District Rangers are coming to the Supervisors' offices to go over in detail their estimates for men and improvements during the coming fiscal year and to analyze, through a close study of their diaries, the work performed by them during the calendar year 1915.

The improvement estimate work has brought out a great need, viz, that there should be readily available for every officer on a National Forest, up-to-date, exact data concerning the availability, initial and transportation cost of the hundred kinds of material needed in maintenance and construction of permanent improvements. The Sierra has gotten out a handbook of useful information which partly covers this need. However, a local Forest book giving not only the kind of information which the Sierra handbook attempts to supply, but in addition cost data of materials, is urgently needed to enable rangers to present accurate, comprehensive estimates to the Supervisors' offices. The suggestion is made that every Supervisor will find it to his advantage to have such a cost book made up.

In order to show clearly to the District Forester the need for men to handle administrative work, the Supervisor must know how many units of each different kind of Forest work have to be looked after in any one ranger district. A Forest Sheet W is therefore a necessity.

The analysis of ranger diaries has been most interesting, and will no doubt result in profit. The Supervisor more thoroughly understands how a ranger spends his time, and the ranger can draw valuable deductions from the analysis; can see where he spent too much time and where too little. A question most frequently asked by outsiders of a Forest officer is: "What does a ranger do ?" If the questioner could see the analysis sheet in which (on the Sequoia and the Sierra) were listed 60 definite ranger activities exclusive of all permanent improvement work, he would have no difficulty in answering his own query.

The Ranger and the Automobile.

Ten years ago, a prophecy that in fifteen years an automobile would be a necessary adjunct to the work of a forest ranger would have been received with scorn and ridicule. Now it is safe to say that in five years 50% of the rangers in Cali-

fornia will own automobiles either for personal or official use or for both.

On the Forests south of the Stanislaus, ranger automobiles are a common sight. With the extension of new roads and the improvement of existing ones in the mountains, with the urgent necessity of making one's time count for the most, the automobile is bound to be a large factor in increasing the efficiency of the ranger, and better than that, is going to allow him to see his public oftener and get in closer touch with it.

While the horse will always be needed, he must share with the automobile the privilege of packing the ranger around.

CONTRIBUTED ARTICLES

Reminiscences of my Visit to the Sierra

by

J.D.Coffman, Deputy Supervisor, Trinity National Forest.

It was with a great deal of pleasure I learned in November I was to have a detail on the Sierra Forest, for among the National Forests, the Sierra stands out to me, as perhaps to many others, as one of preeminent interest and picturesqueness, due perhaps to the wide publicity it has received from the interesting stories and articles written of it by Stewart Edward White, Mr.Shinn and Supervisor Redington. Furthermore, a short visit to this Forest during the summer of 1908 had given me a slight acquaintance with its magnificent Forests and splendid scenery which I was very glad to renew and enlarge.

In view of the fact that my visit was made in December during which month there was considerable snow and rain, I feel that I was fortunate to have been able to spend a good portion of my time in the field, enabling me to see some of the most interesting activities of the Forest.

My visit began with a trip to Big Creek over the picturesque and sinuous San Joaquin & Eastern railroad which has the Tamalpais railway beat to a finish for crookedness. At Big Creek I was amazed at the magnitude of the generators of the Pacific Light & Power Company whose power houses and power lines are a marvel of electrical engineering and efficiency. From a talk with one of the officers of the Company, who had been on the project from the start of construction work, I learned at first hand of the cordial relations which

had existed between the Company and the Forest Service from the very start, and of the splendid manner in which the Forest officers had handled their special use and timber settlement work so as to facilitate the work of the Company in every possible way in its efforts to rush the work through to completion.

At Huntington Lake and at Big Creek there are wonderful opportunities for the further development of the summer home business in a region of great beauty. When I am trying to induce people to take out summer home permits on the Trinity, I will be careful to keep them in ignorance of the Big Creek and Huntington Lake areas until after our permits have been issued and the summer homes built. Then perhaps the investment made will be sufficient to keep the permittee from abandoning it in favor of a summer home on the Sierra!

On the return trip from Big Creek, Acting Supervisor Jordan demonstrated his skill as a pilot of the official "Tin Lizzie" speeder over the snow-covered and serpentine railway tracks.

Later I had the pleasure of accompanying Mr.Jordan over the fire break along the Forest boundary from the northern end of the Forest to Northfork. In this, as in so many other lines of work, the Sierra has led the way.

From my studies in the office at Northfork and my talks with Messrs Redington and Jordan, I gained an insight into the fire organization, cooperative fire protection associations of the settlers, the cooperation of the cattle associations, timber sales and other Forest activities. I was struck with the remarkable saving made in the last two years in both fire suppression and fire prevention costs, due largely to the organization of the settlers into cooperative associations working with the Service instead of against it. As in the case of the Pacific Light & Power Company's operations under Forest Service Permit, so in the recent timber sale of nearly five million feet to the Madera Sugar Pine Company, the striking features of the transaction were speed and efficiency to a remarkable degree and elimination of all delays due to unnecessary red tape. This, in fact, is characteristic of the Sierra, and combined with the sympathetic cooperation of the Forest officers with the residents in all work looking toward the development of the community, has resulted in the most cordial relations between the Service and the settlers, permittees and timber purchasers. As District Forester DuBois concisely put it on a recent occasion, the atmosphere of the Sierra Forest is one of progressiveness - of being abreast of the times in every line.

I feel that my detail was well worth while, as the many valuable ideas I have gained will undoubtedly be of great benefit in my work on the Trinity. I hope the idea of study details will be retained: a change of surroundings and a visit to another Forest of widely different conditions with its consequent exchange of ideas cannot but result in benefits which I believe will fully repay the expense.

In conclusion, I wish to thank all the officers and ladies of the Sierra who helped to make my visit such an agreeable one. I have just one regret: when Jordan found out I could not play pool, nothing would do but that we have some games, and he took great glee in the fact that he had finally found some one whom he could beat. Now anyone who has played pool with Jordan (Don Carlos Ellis please note) will understand my humiliation at this confession!

"Talking Points."
by
Ernest G.Dudley

We have all been pressed for a short description of the life and work of a forester, we have all experienced that tongue-tied feeling for a moment.

In the Sierra Ranger of just a year ago, I was guilty of a short editorial written as a general suggestion about having certain data in our minds which make good "talking points". I will again be guilty of talking on the same idea.

In the first place, if asked a general question like the one I begin with, try and size up your questioner, and then put yourself as nearly as you can in his position. No matter whether you think him a business man, a professional man, a rancher or stockman, or a teacher, first show what the Forest Service is striving for, by a description of the life and work in your district. At the same time, develop the connection between the general everyday life of communities near the Forest and the work as it is carried on. Show how the present generation is a gainer, but at this point don't go too heavy on the gain of future generations -- you might get in wrong at the start.

Now if you have decided that your questioner is a business man, you must have bare facts. You want to know how many cattle were grazed the last year, and what money was paid in by their owners. Use your head. We all know the rate per head, all you need to know is the number of stock. Do a little multiplying. Your results carry more weight. Know the last

financial statement for your Forest; you can then estimate the 25% which eventually goes into the county treasuries, and the 10% which builds roads and trails.

Be able to tell in a general way, if it is known, the Government wealth in your own Forest in timber, water and forage. Have such figures as you can remember from the Forester's yearly report. Give that business man cold facts and figures. He eats them.

The professional man gets much the same treatment with the addition of something of the theory of forestry. We show him why we are doing certain things and what certain results we expect. The professional man has a wider range of reading and study than any other type of questioner, and he appreciates work done for future returns probably more than any other class of men.

The stockman is a business man, but when he finds you can talk stock, out come the cigars, and if he is from the Southwest, almost invariably he will tell you that the Forest Service saved the cattle industry in the southern Rockies. He tells you how the cattle men knew that they were destroying the ranges, but that each man was afraid of his neighbor and did not dare reduce his herd to allow the ranges to recover. The Forest Service treated them all alike, and now he tells how the ranges carry more stock and turn them off in better flesh.

Last but not least comes the schoolteacher. Now get busy. Forestry is established , and is a lusty child of less than twenty. While it needs all available support right now, to fortify it doubly for the future, get the idea into the schools. Not forestry alone, but soil erosion, flood control and everything which conservation stands for. The teacher, through nature study and geography, later through economics and engineering, instills these ideas into the growing generations while their minds are receptive, so here's your chance.

I haven't touched the idea of recreation yet, nor many other phases, but I have no doubt that if a ranger's diary showed three hours devoted to teaching a pretty school teacher the theory of reconnaissance, special use, diameter tapes, and in fact any phase of it but the Biltmore stick, during her summer vacation, he would be marked down as showing improvement. This has happened on the Sierra many times with most gratifying results.

But after all, why conserve the rain ? When I left San Diego they had lured "Hatfield" to make it rain, and I've been back on the Sierra just thirty-four days, and I'm ready to take oath that we've had 34 inches of rain.

Some Construction Economies.

Improvement accounts and estimates for a number of years though they may seem dry to those not in the Service, tell interesting tales to the clerk. In especial, they describe certain interesting economics and suggest others. For example, when lists of supplies for the Grouse Valley trail construction this last summer were being made up, Ranger Boothe, bent on making the allotment go as far as possible, telephoned: "Dehl and I think we can burn charcoal in there, and save packing in blacksmith coal. So only one sack of coal was packed in. The charcoal burning was a success, even at that elevation where the best wood that could be obtained was the pinon (Pinus monophylla) Report of trail work showed, also, that with proper protection from winds, coal or charcoal can be made to go much farther in a forge than without protection.

As an example of the other sort -- economies suggested by their absence -- note this account received from a District Ranger:

June 1, 20# nails, 2 pair strap hinges
" 5 nail, 1.00; two door locks 1.50
" 7 ½ doz. window catches, 15# 8d nails
" 14 30# 8d nails, ten mill files.

and that was only the first part of the account. Nail items appeared seven times . "What is the trouble with ____' thought the clerk. Did he fall down in his nail estimate (for all the account was chargeable to one building project) and that not once nor twice ? If I were doing it, I believe I'd buy at least the commoner sizes by the keg, and keep data about the quantity of other sorts used so that once a year I could buy nails and have that thing off my mind. The time it takes to make a purchase every time one goes for the mail is appalling in the aggregate."

On the Sierra, we have been fortunate in having a medicine shelf, an altruistic young doctor having bestowed certain drugs on the Forest when he left the mountains. Hence with each crew going into the high country, there is sent a medicine chest containining simple remedies for the digestive troubles and colds that may occur, permanganate of potash for snake bites, first aid packets and a first aid manual. These things can now be purchased with Government funds, but the Sierra is lucky enough to have acquired the habit, and it is a genuine economy, a saving of time and temper thus to be able to cure a slight ailment before it becomes a great one and takes a man off the job.

The Ranger's Detail
by
Roy Boothe

I am glad to have this opportunity of discussing my views of the ranger's detail to the Supervisor's office for the purpose of analyzing the monthly service reports (forms 26). I think the man responsible for the idea has started something worth while. It will certainly be beneficial to the Service because it creates in us an incentive to do our work more economically and efficiently . In fact it places the men on something of a competitive basis, and shows in figures at the end of the year just what it costs each ranger district to do its work, as well as the amount of work accomplished with a given sum of money and force of men. If it is beneficial to the Service, so will it be to the men. After the ranger spends three or four days with the Supervisor analyzing and checking up the work done in his district during the past year, he probably has a clearer conception of the actual administration of his own district than he has ever had before. He sees which things are costing the Service more in proportion than they should, and can try to reduce their cost on next year's sheet. In this connection I should like to suggest that as the work is classified and entered on the Work Sheet, the district ranger be given a copy for future reference, also a blank form so that as he makes out his forms 26 and examines and approves those of the men of his district, he can classify and enter the costs on the ' ork Sheet. In this way he can keep a check on costs as compared with the same months of the preceding year. This plan would also reduce the time and labor necessary to classify the activities as shown on the forms 26 in the Supervisor's office at the end of the year, and allow more time for the discussion of the different angles of the work, estimates, etc.

At the risk of getting into deep water and perhaps earning the ill will of the inventor of "job to job", I also offer the following suggestions: As I interpret the manual, there can be very little time charged to "job to job travel". Travel time of the ranger is almost without exception connected with a special project or activity against which it is properly chargeable. The only object in separating travel time as I understand it is for the purpose of comparison in different districts or perhaps Forests. Why, then, wouldn't it be

more effective, and certainly more simple, to enter all time in red ink on the forms 26. For illustration: A ranger goes to examine a tract applied for under the Act of June 11, and spends six hours in traveling to and from the job and three hours in looking over the job. It would make it easy of record if he entered the travel time in his diary, so that when he made out his Form 26 he could show in black ink , charged against settlement, 9 hours; and in red ink in the same space he could enter a small figure 6, to denote the amount of time spent in travel.

I realize that much wiser heads than mine have figured on the problem of recording time of job-to-job travel, but even so it is not always clear to me just what should be charged there and why, while this double entry scheme seems so simple that there could be no confusion for the ranger provided his diary was full enough to enable him accurately to prorate the time where several activities were served in one day's travel.

My Sojourn on the Sierra

by

Margaret D. Fulham

When Deputy Supervisor Jordan, in an unguided moment jokingly remarked that as Mrs.Fulham was leaving the Forest it was up to her to write a reminiscence of her sojourn on the Sierra National Forest, he little thought that she would take him up and that he would be compelled, out of respect for her feelings to publish the article in the Ranger.(There seems to be a misconception here. The Editors.)

My soujourn on the Sierra. It has indeed been a very pleasant and profitable one. Not only has the association with the officers connected with the Forest Service been very enjoyable, but the kindness and courtesy shown by all the people in this little community have combined to make my stay on this Forest a time to be remembered, and it is with deep regret that the ties formed here are severed. I say severed, but I mean only in so far as actual contact is concerned. Needless to say my thoughts will often revert to the hills, and when the coast winds blow and the fog drifts in over the Bay, I will think of the clear skies and bright sunshine and of my fortunate friends on the Sierra (By that time the storms of January will have been forgotten.)

While I have not had an opportunity to travel over the Forest much and see with my own eyes the improvements at the different stations, I have had the improvement inventory to

wrestle with, and with due thanks to the Property Auditor, I think I have every improvement vividly impressed on my memory. I am sure I would recognize every house, barn, tool-house or fence at any of the ranger stations, and as for the telephone lines, roads, trails and bridges, - just ask me, and I will tell you what they are made of and how constructed.

The work has been, to say the least, very interesting and never monotonous, for while there is a great deal of everyday routine work, there is also something new and diverting coming up every day, and as there are eight telephone lines coming into the office, one can readily believe that that helps some to relieve any monotony that might occur.

The Sierra National Forest as a whole will always have a place in my heart, and the memory of the pleasant days spent with my fellow workers, both in a business and in a social way, will remain fresh for all the years to come. I am proud of this Forest and proud of the fact that I have been, even in the smallest way, connected with it for the past two years and a half.

HEADQUARTERS NEWS

The question of installing a satisfactory water system for the special use permittees at Big Creek has been considered for some time. On November 3, Deputy Supervisor Jordan met with a number of the permittees and an informal agreement was made for a cooperative project. On December 3, Mr. Jordan, Clerk Leslie (who is an even better engineer than clerk), and Deputy Supervisor J.D. Coffman of the Trinity all went to Big Creek, and this time an accurate survey was made, with the transit, of the proposed pipe-line route. Mr. Leslie then mapped it, permission and additional funds were obtained from the District Forester, bids for pipe sent out, and all in all the project seems in a fair way to be completed during the coming summer.

Deputy Supervisor Coffman, after this introduction to work on the Sierra, was on this Forest, either in the office or in the field, for a month, after which he went to the Sequoia Forest with Mr. Redington. This is the first of the interforest details inaugurated by the District Forester, and the Sierra feels it has profited by the interchange of theories, conclusions and plans. The impetus given by a man with a fresh viewpoint was decidedly worth while.

On November 22 the Supervisor completed and mailed his report on the construction of the Muir Trail within this Forest. It was illustrated with fifty-one photographs, the majority being Mr.Redington's own panoramic views, though some were Ranger Boothe's work. One of Boothe's, showing the men drilling in rock across which the trail must pass is used for the cover illustration of the R.ANGER. The report was made to the State Engineer who expressed most cordial appreciation of both the work and the report. A copy was then sent to the Sierra Club which will print a part if not the whole of it in the BULLETIN.

With the approval of the District Forester, Mr.Redington has sent out several hundred copies of a circular letter to The Neighbors in and near this Forest, telling what the Service is ready to do and what it always has done for the settlers, and inviting cooperation. One feature of the letter was the offer to disseminate throughout the Forest and by notice on the District Forester's bulletin board information as to land,stock or products for sale by people living within the Forest. This letter, which was given wider publicity by the courtesy of the Fresno REPUBLICAN which published it in full, has been very well received, and already two settlers have listed land and improvements for sale.

The right of a Forest officer who has an appointment from and wears the badge of the State Fish and Game Commission, to search the wagon or pack of a man suspected of taking out of the Forest game killed out of season, has been so frequently discussed, that a letter was recently written to Assistant Commissioner Ferguson asking if such a search , without a search warrant, was legal. Mr.Ferguson's reply follows:

> Under Sec.1 of Sec.642 of the Political Code which defines the duty of the Fish and Game Commissioners and their deputies, it is provided that the 'Fish and Game Commissioners or their regular salaried deputies or assistants shall inspect all buildings other than dwellings, and all receptacles other than the clothing actually worn by a person at the time of inspection, where game or fish may be stored or placed.'
>
> I do not know whether the Forest officers would

fall under the section quoting regular salaried deputies; but since there are no honorary deputies except the Forest Service officers, and since we have always the old proposition to fall back on, which is that if a man refuses to submit to inspection or search we have the right to arrest him for breaking the game law, and thereafter search even his person, I think you would be safe in proceding to make anyone show you his pack.

The changes in organization made by the State Fish and Game Commission, while their wisdom is not questioned are greatly regretted personally by the men of the Sierra. Mr.Ferguson, while in charge of the Fresno Division now to be abolished, has done so many things for this Forest -- not only in matters pertaining to fish and game, but in a dozen lesser ways, from looking up the financial standing of a timber sale bondsman to telephoning a time-table to a Forest visitor, that the Service men have been only too glad to do all in their power to help him in his work and incidentally we have learned much of the value of that work. The following quotation from a letter received in November from Mr.Ferguson shows his appreciation of this cooperation; we would find it hard to show ours:

> "Permit me to extend my very sincere thanks for this evidence of your prompt and active cooperation. * * * You have not only done all that we had any right to expect, but have gone much further. The friendly relations between your Service and ours is the most pleasurable and satisfactory feature of my public work."

The Sierra - in especial, Mr.Redington who originated the idea and Rangers Price and Barlow who did the work - had the pleasure of helping to increase the joy of the Fresno children at Christmas by getting out a lot of Christmas trees at Big Creek . The San Joaquin & Eastern and the Southern Pacific Railways carried them free of charge, and the Fresno Playground and Recreation Committee was thereby enabled to have mountain firs -- real Christmas trees -- instead of cypress, for instance, as some of the other San Joaquin Valley towns used for their municipal Christmas trees.

The summary of receipts and expenditures for the fiscal year 1915 on this Forest has been received. It shows a gratifying surplus of $7079.01 in receipts over expenditures. To protect and improve the 1,495,066 acres of the Sierra and to administer the timber sales, water power uses, special uses,

grazing and other activities within the Sierra cost us something over three cents an acre.

Although the "oldest inhabitant" instsis that he "don't jes' remember seein' sech a long rainy spell sence '61 - the year of the flood", the records kept at Northfork show that while the report for January 1916 was 23.09 inches, that for January 1914 - the year we cut the fire line on the boundary-it was 23.98; for January 1911 - the first month of Mr.Redington's life on the Sierra and a month he spent largely out of doors - it was 22.68; and in 1909 it was 23.15.

On January 3, Ranger Frank Price left for Los Angeles, there to be in charge of a party doing special reconnaissance on special use propositions for three months. Mr.Price's experience at Big Creek and Huntington Lake should stand him in good stead there, and the experience gained there should be of help to this Forest .

It is with deep regret that the death of two men is announced, both of whom were at one time rangers on this Forest. On December 2, 1915, George Hollister met with a fatal accident in the course of his duties as a ranger on the Santa Barbara Forest. He leaves a wife - Ranger McLeod's sister - and two children. Ranger Hollister scaled timber on the first sale made in this Forest to the Madera Sugar Pine Company, and was a good, all-around man in those days of a small force when each man had to make good or something suffered.

The other death that comes very near to the Sierra is that of Sylvester Dehl, one of the early-day rangers here in the Northfork District first, and later in the Pine Ridge District. Mr.Dehl was a man of marvelous physical strength which he knew how to use to the best advantage. He was of especial value to the Forest in construction work. After leaving California some years ago, he farmed in Illinois for a time, but returned, and last summer was in charge of the difficult trail work up the South Fork of Kings River. As a friend and as an able man, Sylvester Dehl will be greatly missed on this Forest. He, also, leaves a wife and children.

DISTRICT NEWS
Mariposa District.

Owing to the continued storm, it has been impossible to accomplish much work during the past month. Telephone lines have held up remarkably well during the stormy weather and high winds. In going over the lines, it was found that

the standard lines had held up in good shape and are an improvement over the old lines.

The stockmen of this district expect to hold a meeting in the near future.

The Standart Bros. are on a deal with other parties to buy up all the timber in this locality and build a new mill and logging road. It is hoped that the deal will go through. If it does, they anticipate buying government timber tributary to their holdings.

On December 28-29 , Deputy Forest Supervisors Jordan of the Sierra and Coffman of the Trinity visited this district. They rode over the fireline while here. Our Deputy Supervisor is fond of riding in the rain.

Mr.Bernard Kane, one of the old-timers here and a stockman of the district who was always in sympathy with the Service, died in December.

Sugar Pine District

The heavy wind and snow of the past month have put most of our telephone lines out of commission. Only the line from Northfork to headquarters is in use, the snow being deeper in the valley than for many years past.

District Ranger Taylor was called in to the Supervisor's office on January 16 to work over the annual estimates with Deputy Supervisor Jordan, analyze the monthly summaries and check them with the diaries for this district, and plan work for the coming year. A detail to the Supervisor's office for a week or two every winter I think would be a great help to all the rangers. What think you, pals ?

Mrs.M.C.Laramore one of the pioneer settlers in this vicinity, passed away on January 4, at the age of 74.

The switchboard which has been at Burford Station for the past three years, has been moved to the McLeod place near Oakhurst, where Mrs.Creston Boothe now performs the duties of telephone operator.

Northfork District

January 1916 has differed greatly from January 1915. Indeed we have had more snow during this January than we usually have in a whole year. Heavy snows occurred on the 10th and 28th, with so many lighter falls between that the ground has been white most of the month.

We hope not to be snowed in, here at Northfork, many more winters. Certain strangers in the neighborhood are said to be railroad engineers looking up the earlier surveys for the White and Friant Lumber Company who anticipate cutting in the not-too-distant future, and must first consider railroad possibilities.

The heavy snows and a hard wind storm put our telephone lines out of commission pretty badly. The difference between the bracket lines and the standard swing lines was very noticeable, the standard lines enduring the strain much better.

During the big snow of the 28 of January, small game suffered considerably. Quail and rabbits froze to death, and many quail were noticed who were so cold they could not fly.

Range stock in the vicinity of Northfork are in bad shape. Some have died of cold and starvation and owners report that they may lose half of their cattle.

Dolly, one of the Government span, had a badly swollen leg, caused by "calking" herself -- striking her fore leg with the calk of a hind shoe. Some infection seems to have gotten into the wound, and the leg was swollen hard from hoof to body. Fortunately she was at Auberry, and the needed medicine could be gotten quickly from Fresno by train. She is in good shape again.

Pine Ridge District

District Ranger Price transferred his headquarters from the summer camp at Shaver to the winter office at Auberry, on November 3.

District Ranger Price and wife spent the latter part of November and the first part of December at Cascada while Price and Barker built the new barn.

Assistant Ranger Barker and wife moved from Cascada to Auberry about the middle of December and are occupying the District Ranger cottage at Big Sandy during Mr.Price's detail to the southern Forests for special use reconnnaissance.

The heavy snow storms of the last month caused a great deal of damage to the Forest telephone lines and added to the wind of January 27 reduced them to the worst condition they have been in since they were constructed. Our summer repair work in the back country bids fair to be pretty heavy, as a great many trees fell in the pine belt. Roads and railroads suffered also. The snow at Cascada has been about three feet deep .

Acting as District Ranger, Assistant Ranger Barker was called in to the Supervisor's office for analyzing and checking reports and diaries for the work sheet of the Pine Ridge District. He reached the office on January 10, in spite of rain, snow and washed-out bridges, staying a week for this work.

Kings River District

Ranger Parkinson is serving a six months detail at hard labor on the Cleveland Forest. He came back to the Sierra to spend the holidays and brought Mr. Searcey, his District Ranger, toshow him a real Forest. They were only able to get a distant view of the upper country, though, as everything was covered with snow up in the timber.

The Indian Service, under the supervision of Mr.Virtue at the Tule River Agency, has opened an Indian school at the old Sycamore Ranger Station. They expect to make a number of improvements there if the attendance at the school justifies them.

Mr.Redington made a business trip to the Kings River District in November and Mrs.Redington and their little son Edward accompanied him for their first glimpse of the Trimmer country.

Ranger Boothe spent several days in December trying to locate a corner on the Township line, near the old Boris

Ranch, but only succeeded in satisfying the interested parties that the corner had been destroyed, if indeed it had ever been placed there. The survey had been made about 60 years ago and many things might have happened to a corner in that time, especially in this case where the field notes do not call for any bearing trees.

Prospects for more business in the Kings River District for 1916 are beginning to loom up. Jay Robinson expects to start a tourist business at Dinkey with hotel store, pack train, etc., Rumor has it that the Fresno Flume and Lumber Company expects to operate again this season, and newspaper reports are appearing frequently indicating the public sentiment that is in favor of developing the Pine Flat Reservoir site. In fact, a movement has already been started to effect an organization of the districts that will be benefitted by the reservoir project, so that they can be in a position to get busy with the preliminaries for launching the scheme. In the mean time, we have got to get busy and figure out a scheme whereby the Thermal ranger house can be converted into a house-boat and floated ashore, as its present site will be covered by several feet of water, according to the survey.

Thermal Station house is being repapered this stormy weather, and begins to look quite like a new house, as far as the interior is concerned. By the time we get through with the job, we will be ready to hang out our shingle as professionals. (You may notice that I am not taking all the responsibility on my own shoulders -- and why should I when the job is being done by a partnership firm ?)

The seasonal rainfall to date - January 24 - is more than 17 inches, and it is raining hard while this is being type-written. The average for the month of January, 1916, to date, is about half an inch for each twenty-four hours.

District Ranger Boothe went to Northfork for a week's detail, reaching the Supervisor's office on the morning of January 4 and spending a week over the diaries, monthly reports and work sheet of the Kings River District.

FORESTRY AND RELATED ITEMS OF INTEREST.

The last number of the Forest Quarterly (Vol. XIII No.4) reports in full the address of W.N.Millar, Assistant Professor of Forestry at the University of Toronto, before the Canadian Society of Forest Engineers. The address is an admirable one, and is to some extent applicable also to the United States. Although the people of the United States have come to a fuller appreciation of the need of technical experts in all of its scientific projects such as Forestry, irrigation, improvement of waterways, highways and sanitation, it is still true of a trained forester here as in Canada that he must "on the one hand convince the nation of the vital connection which exists between national prosperity and the conservation of forest resources, and on the other he must demonstrate his fitness for handling the Nation's forests in an efficient manner."

The January issue of American Forestry contains an eye-opening article by Mr.Graves on the Forests of Alaska. Not California - nor Oregon nor Washington - has a monopoly on the fine conifers of the west coast, as both illustrations and text of this article show. Nor are all the Forest fires within the main United States. And the Forester proposes to take care of those Alaska forests. If you doubt it, glance at the illustration of big timber on the Tongass. We all knew Mr. Graves was a good fighter, but we did not expect to have a photographer catch him in the act.

There is also an interesting article in this number on the National Parks, by the Honorable Franklin Lane, Secretary of the Interior; and one on the Sequoia National Park by Mark Daniels. Indeed it is such a fine issue that once more rangers are reminded that these magazines, though they come to the Supervisor's office, are for the whole force, and a number will be sent to any member, on request.

The National Wool Grower for January is the "convention number," and a very practical and interesting lot of addresses are given in full. President Hagenbarth, in the course of his address gives much credit to the Department for its experiments in connection with the breeding and feeding of lambs, and gives much praise to the Forest Service for its management of sheep grazing problems. Mr.Will C.Barnes of the Service tells of the experiments on the Forest ranges with improved systems of herding, deferred use of part of the range and other cooperative work. F....Ellenwood of Red Bluff, California, one of the most progressive and successful of California sheep men, gives

in detail his system of management. Altogether it is a number of the Wool Grower that is of interest not only to sheep men but also to those rangers who come in contact with the sheep men of this Forest. It is suggested that any ranger desiring to inform himself on questions of sheep and range management request the office copy of the Wool Grower.

District 5 has no longer the distinction of having issued the only fire protection manual. District 1 has now issued a similar manual, with special instructions suited to the conditions of that District. A copy of this manual has been sent to each district ranger, and they will find a comparison of the two fire manuals of interest.

The February number of the San Joaquin Light & Power magazine prints as its leading article a paper by Mr. Redington entitled "The San Joaquin Valley's Big Neighbor" and illustrated by views along the Muir Trail.

Maurice A. Benedict

Associate Editors

Chester E. Jordan

Dwight C. Birch

THE SIERRA RANGER

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of the

SIERRA NATIONAL FOREST

Northfork

California

May 1, 1916

Editor

Maurice A. Benedict

Associate Editors

Chester E. Jordan

Dwight C. Birch

PERSONNEL

Sierra National Forest

Maurice A.Benedict	Forest Supervisor	Northfork,	Calif.
Chester E. Jordan	Deputy Forest Supervisor	"	"
Ernest G. Dudley*	Forest Examiner	San Diego,	"
Dwight C. Birch	Forest Examiner	Northfork	"
J.T.Shinn	Forest Clerk	"	"
George F. Leslie	Clerk(stenographer)	"	"

Mariposa District

Malcolm McLeod	Forest Ranger in Charge	Usona	"
J.C.Werly	Assistant Forest Ranger	"	"
E.T.McLeod	Telephone Operator	"	"

Sugar Pine District

W.B.Taylor	Forest Ranger in Charge	Oakhurst	"
H.L.Clark	Forest Ranger	"	"
R.C.McKenzie	Forest Guard	"	"
Pearl Boothe	Telephone Operator	"	"

Northfork District

A.K.Wofford	Forest Ranger in Charge	Northfork	"
E.S.Mainwaring	Assistant Forest Ranger	"	"

Pine Ridge District

Frank Price	Forest Ranger in Charge	Auberry	"
C.K.Barker	Assistant Forest Ranger	"	"
W.H.Parkinson	Assistant Forest Ranger	Big Creek	"

Kings River District

Roy Boothe	Forest Ranger in Charge	Trimmer	"

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*In charge Forest Exhibit, Panama-California Exposition.

EDITORIALS

An Appreciation. Paul G. Redington, after five years of directing the destinies of the Sierra National Forest, has moved into a larger field of labor, and while all of us knew this move was inevitable at some time, we liked to put off the evil day as long as possible. It seems but a few months since I met Redington at the end of his stage trip from Friant, and I look back on our work together with a feeling of pleasure and appreciation. The Sierra and District 5 have lost a man who has been foremost in shaping large and far-reaching policies, who was enthusiastic and optimistic under all circumstances, and who embodies in a very large measure those qualities that have become so necessary in the make-up of the ideal American Forester. The Sierra Ranger desires to extend to him its appreciation of his work here and its confidence in his future. Good luck to you "Red".

The 1916 Fire Season. Before another issue of the Ranger is out, the fire season will be in full swing. The stage is all set and out parts are letter perfect. Time and circumstance only will show how far our foresight has met the situation. The Sierra has never received the fire prize. We believe our system has been just as good as that of other Forests, but we may be mistaken in this and it behooves us to put our best thought and action into the game to bring our record to the top. It is not impossible nor improbable, but it means careful thought and quick, decisive action. To believe that it can't be done is to get into a rut that will lead us to ruin. There is an ancient maxim that "where there's a will there's a way," that can be aptly applied to this situation. It's up to us. Let's hang up a record that can't be touched.

What are we worth ? A former supervisor of this Forest recently received a letter from a friend visiting in Alaska who was most enthusiastic over the work of one of the rangers on the Tongass, but indignant over the smallness of his pay check. "Why, he's worth twice that!" wrote the visitor. "Of course he is", was the reply. "So are a majority of the rangers on this and all other National Forests. They expect to

give two dollars worth of service for every dollar they get. What do you take them for -- money grubbers ?"

This is mighty true. There's not a decent fellow on the job that counts his hours or stops his day's work when he thinks it matches his day's pay. Not everyone outside the Service realizes that it is, in a very real sense, a profit-sharing concern; that we are working for ourselves, knowing that our children's children will reap the benefit in protected forests, protected water supply, protected pastures, protected playgrounds.

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CONTRIBUTED ARTICLES

A Last Word
by
Paul G. Redington

Even after two weeks in New Mexico where there has been a plenty to do, I somehow cannot yet realize that I am, to all intents and purposes, physically disassociated from California and the Sierra. Our reception here was most cordial and the start has been auspicious. I feel that I shall like the work and the location very much, chiefly because of the patent friendliness of everyone with whom I have come in contact. Every once in a while there comes a sneaking feeling, however, that I ought to get down to the office before Jordan does, to start the furnace fire, or that it is time to close up shop and go for the mail. I suppose because "time is a great healer" that the real homesick feeling will not be so keen a few months from now. One thing, however, will always remain and that is my appreciation of all that my five and a half years at Northfork brought to me in the way of friendly and profitable association, officially and otherwise. I shall see to it that I do not get out of touch with those associations and I would indeed be forlorn if I did not feel that from time to time it is going to be possible for me to personally see you all again.

My very best wishes to all go with this.

Horse Insurance
by
A.K.Wofford

Let us all stay with the horse insurance plan. The proposition looked pretty g od to us at first, when assessments were light and several Sierra men were paid for their horses, but recently assessments have been many and higher than at first. As a result a number of the men are dropping out - which looks like a pretty poor policy. No one expects to get some thing for nothing out of this. As in all mutual insurance propositions, a man expects to put into it all he ever takes out. It only means that instead of having to dig up the whole price of your horse when he dies, you have paid - or will pay - for him in small installments.

I believe, however, that instead of assessing each man the same amount, regardless of the value of his horse, it would be a fairer way to prorate the assessment according to the valuation put upon each horse at the time he was insured. Let the owner give not only the name, color and age of the horse he wishes to insure, but the value, certified to by a committee as it now is upon the death of the horse. That would at least lower the assessment of the man who now thinks the insurance pretty steep for a cheap animal.

Special Use Reconnaissance in Southern California
by
Frank Price.

A winter spent in southern California! This sounds like all play and no work, but I hope that the following statement of facts will help to dispel the illusion.

I left my headquarters on the Sierra on January 1, and arrived in Los Angeles at 8 P.M. January 2. Never having been in such a large city before, I of course followed the time-worn custom and walked up the middle of the street with a suitcase in each hand until I found an electric sign proclaiming that that particular building was the Hotel Rosslyn. After some argument with the night clerk and a tussle with the bell boy to keep him from getting away with my grips, I was finally put into a large iron cage and hoisted to somewhere near the top of the building where I was shown a room which I was told I could occupy for the night.

At 8:30 the next morning I reported to Forest Supervisor

Charlton at his office in the Federal Building, and there I also met Forest Examiner Morrow who was in charge of special use work in the field; Deputy Forest Supervisor F.H.Smith, chief of party on the Angeles, and Ranger Robinson of the Stanislaus who was detailed to special use work on the Angeles. Mineral Examiner Friedhoff, who was to have charge of the party on the Cleveland Forest, did not arrive until later, so it was decided that those present should get together on one project on the Angeles before dividing the three parties, and in this way get a general idea of the work, as well as establish a more uniform system under which to work.

The first project, the San Dimas Canyon, was worked out under very unfavorable weather conditions. Due to the almost continual storms during the month of January, the different parties did not get started to work on their respective Forests until almost the last of the month.

And while speaking of storms, I might say a few words in regard to the protection of watersheds from erosion in that part of the State. The slopes are steeper and more broken than those of the Sierra, and the soil is looser, so that erosion tends to be very great during heavy winter storms. To prevent this, thousands of dollars are spent annually on both the Angeles and the Santa Barbara Forests, by the Service and by owners of property in the valleys below, in building fire lines and trails with which to protect the brush cover of the slopes. Should a large fire destroy this cover, untold damage would result from the torrents of water that would, each winter, descend upon the many fine orange orchards and residences along the foot of the range. This damage cannot be entirely eliminated, as shown by the heavy losses caused by storm last winter, but it is materially lessened by the brush cover.

While working down there this winter, I often wished that we could transplant some of our Sierra pines, firs and cedars to a spot near Los Angeles or Santa Barbara, where their shade would be enjoyed by so many people during the warm summer months. On the four areas over which I worked during the winter on the Angeles and Santa Barbara Forests, oaks were the only shade trees, and while they make excellent shade, they are found principally along canyon bottoms or along streams, and the area available for special use

lots is generally very limited. In most cases they are quite a distance from the large centers of population but are eagerly sought by those having ways of getting to them.

Our first area on the Santa Barbara was about sixty miles from Los Angeles but several parties were out at the tract to make application for lots before we had finished the survey. There were approximately 90 lots in this tract, and as it was located on a bench on the slope of the mountain and was fairly level, the area was laid out very much as a town site is surveyed, with blocks, lots, streets, etc. Other areas were either canyon or river bottoms, and the lots were more scattered, many being isolated.

Our last area was on the Santa Ynez River, perhaps 25 miles north of Santa Barbara. Many nice lots were located there, as the land along the river is fairly level and the oak timber quite thick and forming fine shade.

The problem of supplying water for the special use areas is as great in the south as it is on the Sierra. Many of the streams become dry during the summer and water has to be either developed or piped from quite a distance.

I found the special use work very interesting, and feel that my time for the three months was well spent. The opportunity of exchanging ideas, of observing the administration of the various Forest activities under conditions differing from our own, must have one result — the enlarging and broadening of one's mind, and thereby the making one of more service to his own Forest. But the most pleasant part of the time was that spent in forming new acquaintances among the members of the Service both in the field and in the office at Los Angeles and at Santa Barbara where every courtesy was shown us.

Winter Sports at Huntington Lake.
by
Claude K. Barker

About eighty people, most of them members of the Commercial Club of Fresno, attended the winter sports at Huntington Lake in February. The party experienced various modes of travel before reaching their destination. The trip from Fresno to Cascada was by the San Joaquin & Eastern Railroad; from Cascada they were taken in stages for two miles, then transferred to snow boats. These snow boats were built on the same principle as a flat-bottom row boat, and were drawn by four or six horses hitched tandem. In the snow boats the crowd was taken over eight and ten feet of snow to Huntington Lake Lodge.

The days and an hour or more each evening were spent tobogganing, skiing, snow-shoeing and snowballing. The toboggan slide was about 1500 feet long and furnished great sport for all the guests. There was some pretty good skiing done - and some not so good,-but the snow-balling was everybody's fun. The crowd was also greatly interested in the motion pictures taken of all the snow sports. Each evening there was music, dancing, singing, story telling and card playing at the Lodge.

After three days of these sports, the guests returned to Cascada and took train for Fresno, all so well pleased with the outing that it seems probable this will become a regular annual proposition.

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The Way It is Done.

by
Chester E. Jordan

This year the District Forester, as you know, had an analysis made of rangers' diaries, to find out just how the time of the men is spent, and to deduce from that the number of men needed to carry on the work proposed for the coming fiscal year. This first step was carried further by applying much the same idea to the Supervisors' annual estimates. He called the Supervisors into his office, in small groups, each armed with his diary analysis and his estimate of needed improvements as worked up in careful consultation with his district rangers.

This preparation of an annual estimate for a National Forest is one of the most important factors in Forest management, largely because each separate phase of the work has to be considered before a Supervisor is at all certain of the proper force of men and the amount of improvement work necessary for the proper administration of his Forest It is the first step in that "budget system" of expending public moneys which is so much in the public mind these days.

The estimates brought in by each Supervisor of a group were gone over one by one, each item being considered from every possible angle. As the different supervisors meet different conditions in handling work of the same class, here was room for much discussion and exchange of ideas. Some

of the Supervisors took advantage of the experience of others and made many changes in their estimates both in figures and in projects.

It is by much discussion of of a plan or system that many ideas are finally consolidated . This means that in the end the money allotted to the Forest Service is spent in the way that will bring about the greatest results according to the combined judgment (1) of all the rangers of a Forest with that of a Supervisor; (2) of all the Supervisors of a District with that of the District Forester.

The Cover Illustration.

The cover illustration shows former Supervisor Redington and his yearlong force. This was taken on April 10, two days before Mr.Redington left the Sierra and four years later than the photograph which formed the cover illustration of No.1 Vol.II of the RANGER. A comparison of the two pictures is interesting. All but three of the men in this photograph appear in the earlier one. Those three are D.C.Birch, Forest Examiner, and G.F.Leslie, Clerk (recent additions to the Forest force) and W.H.Parkinson who was unable to be at Northfork at the time the earlier picture was taken. The rangers look a little older (witness the tops of several heads) and a little less worried - note the happier expressions of Taylor, McLeod and Mainwaring. But though he also looks happy, Mr.Redington appears decidedly thinner than in the former illustration. It has been suggested that he looks happy at the prospect of leaving the Forest that has worked him so hard.

The most marked difference, however, is in the number of men. Aside from the visitors, there are twenty-five Sierra Forest officers shown in the first picture; in the second there are but fourteen. Even counting out the two summer men -- Duncan and Gray -- who appear in the first picture, there is still a startling difference in numbers. The Forest is being run with fewer yearlong men than in 1912. This economy is made possible partly by the better means of travel and communication that have been built up, but partly because of the change in policy . Instead of holding a considerable force of men all the time, the Forest now has only a small force of picked men yearlong, and a largely augmented force during the season of greatest fire menace.

HEADQUARTERS NEWS

"The King is dead! Long live the King!" is the important piece of headquarters news, and that can hardly be called news to the men of the Forest force. Mr.Redington left April 11, something over five years after his first coming to the Sierra, and Mr.Benedict arrived April 25, approximately two years after he had left the Sierra for a detail on the California National Forest. Although Mr.Redington's departure is keenly regretted, the arrival of Mr.Benedict is hailed with the acclaim given the long-lost brother. Mr.Coffman, Deputy on the Trinity, and the guest of the Sierra last winter, has been made Supervisor of the California to succeed Mr.Benedict.

Assistant District Forester Rachford was on the Sierra the first week in March and expects to be in the office again shortly to go over all the records carefully.

On April 26 Ranger Boothe telephoned to headquarters reporting that the bridge over the North Fork of Kings River near Cliff Camp had been carried out by the winter's weight of snow. This bridge was built by the Service and the cattle men in 1906 and has been of great service. However, a party of mining men, kept from reaching their claims by the lack of this bridge, returned to Trimmer and offered - through Ranger Boothe - to supply four workmen and do all the packing if the Service would purchase necessary material and oversee the building of a new bridge on the old site. The telephone message from Boothe was transmitted in the form of a telegram to the District office, and the next day a reply telegram authorized the expenditure of $150.00 for materials. This was on Saturday. On Monday morning part of the material for the construction of a good cable bridge was bought from the Power Company at Big Creek and the rest was shipped by rail from Fresno to that point, the four men and the pack train was started and Ray Boothe, with Mr.Leslie were on their way to oversee the job. The Sierra is fortunate in having a clerk like G.P. Leslie who can draw a bridge plan in the office, make out specifications for the material, then put the plan in his grip and start for the site to help the district ranger build the bridge. As we go to press, May 16, the bridge is probably completed.

Since the last issue of the RANGER, grazing applications have been approved for this season amounting to 14,464 head of cattle and horses and 12,700 sheep. This is over 500 more cattle and 5000 more sheep than came into the Forest last season. It looks as if the Sierra's business was growing steadily, and with the increased timber work this year we will be able to keep up our end in District 5. In this connection it will be of interest to the men of the Forest to note the increase in Forest income as shown by the following statement sent out by the San Francisco office:

COMPARATIVE RECEIPTS STATEMENT -- DISTRICT 5

Net Receipts.

Items	F.Y.1915	F.Y.1916	Increase Amount	%
Timber Sales	$58775.40	$62609.79	$3834.39	6.52
Timber Settlement	774.29	825.69	51.40	6.64
Timber Trespass	4303.33	10637.72	6334.39	147.20
Grazing	37461.81	39529.36	2067.55	5.52
Grazing Trespass	169.93	585.05	415.12	244.29
Special Use	14162.06	15838.45	1676.39	11.84
Water Power	36155.75	65590.21	29434.46	81.41
Fire Trespass	88.40	107.02	18.62	21.06
Totals	$151890.97	$195723.29	$43832.32	28.86

Supervisor Benedict and Deputy Supervisor Jordan appeared before the Boards of Supervisors of Madera and Fresno Counties the first week in May and laid before them the needs of the Forest in connection with tourist travel in the mountains. Madera County promptly voted $300 toward the upkeep of the high country trails in that county; Fresno County agreed to give $400 toward a much-needed bridge across the Middle Fork of Kings River at Simpson Meadow. These two counties have for several years cooperated with the Service in work of this kind.

A septic tank has been constructed and a modern sanitation system installed at Bridge Station for the houses of the Supervisor and Deputy and for the office.

The amounts remitted to Mariposa, Madera and Fresno Counties from the receipts of the National Forests during the fiscal year ending June 1915 were as follows:

Mariposa	$1,019.26
Madera	3,467.75
Fresno	11,984.41

This addition of something over $16,000 dollars to the school and road funds of these three counties makes up in a measure for the taxes the counties would otherwise receive from land now withdrawn from entry.

DISTRICT NEWS

Mariposa District.

The rainfall for February and March was 14.72 inches, including six inches of snow. But the nights have been comparatively warm and the feed is growing finely so that stock is in very good shape.

The Granite Creek and Devil's Gulch Trail is being completed , ready for use this summer.

Mr.J.C.Elliott of the District Office and Forest Examiner Birch of this Forest have been in this district since early March cruising timber near the Standart Mill. They expect to be here for some time still, as there is a large body of timber to be worked over, and inquiries as to stand and quality of the timber have been made by prospective buyers.

Ranger Werly was called to the Sugar Pine District for a couple of weeks to assist in the fireline work, and since returning to this district he has been working with Mr.Elliott during a temporary absence of Mr.Birch.

Rangers Clark and McKenzie were working on the fire line in this district ten days during April.

The rangers from this district, with their wives met the other rangers of the Forest at Northfork on April 8 to bid Mr.and Mrs.Redington goodbye. We are all sorry to see Mr.Redington leave us, but are glad of his promotion and wish him good luck and success in his new home.

Sugar Pine District

The fire-line crew , consisting of Rangers Clark, Werly and McKenzie rebrushed and plowed the fire line from China Well to the Wawona Road, a distance of five miles. After completing this section they went to the Mariposa District to clean out the fireline there.

The Fresno River Fire Protective Association called a meeting on April 15 and disorganized. Lack of interest shown by the members was given as the reason for disorganizing.

On March 6 there was a call meeting of the stockmen of the Sugar Pine District, at Coarse Gold to talk over grazing matters and to organiza a stockmen's association. The attendance was large and a grest deal of enthusiasm was shown by everyone present. Forest Supervisor Redington and Deputy Supervisor Jordan from Northfork, Assistant District Forester Rachford from the District office and Rangers Clark and Taylor from the Sugar Pine district attended this meeting. Mr.Redington and Mr.Rachford each gave a talk on the advantages of an association, after which the stockmen proceeded to organize the Madera County Livestock Association, electing officers and appointing committees. The meeting then adjourned to meet again April 1, to discuss and accept as far as satisfactory the bylaws to be submitted by the committee on bylaws. The membership enrollment was twenty-six.

The Madera County Livestock Association met on April 1 at Coarse Gold to adopt bylaws and regulations to govern the association. A number of subjects pertaining to grazing were discussed, then adjournment was taken till their next semi-annual meeting.

On April 5 a number of stockmen, users of the back ranges, met at the Cox ranch to repair the road running from Crane Valley to Soquel and Jackass Meadow. They put in six days, building half a mile of new road and repairing the old road as far as Board Ranch Creek, the Forest officers agreeing to repair the road from that point to Beasore Mountain.

E.C.Bissett and Company expect to start operations at their shake and shingle mill at Nelder Grove as soon as the snow is off so they can get in.

A crew will start back May 20, weather permitting, to rebuild the Northfork bridge, the old "soldier bridge" having gone out last winter.

Northfork District.

We of the Northfork District were very sorry to have to give up Mr.Redington, but if he had to leave us we are glad to know it was for a higher position. However, we know of no one we would rather have to take his place than Mr.Benedict. Let us back him up with all there is in us.

The forage crop on the lower ranges of this district are about normal for this time of year, but need rain badly. On the Chiquito the forage is below normal because of lack of moisture. The last heavy rain that fell at Northfork did not reach the Chiquito.

Although there was an unusually heavy snowfall this winter, well above the average, the snow has melted fast and is now decidedly below normal in depth for this time of year.

The Forest Service telephone line to Ellis Meadow is broken down badly, partly due to poles rotting at the surface of the ground, partly to the falling across the line of six large trees besides numerous tops and limbs.

The telephone line within the Chiquito Basin , from Logan to a point about a mile north of Placer Station, a distance of about three miles, is in even worse shape, for the region seems to have been struck by a cyclone of the Kansas type. Within a radius of one mile from Placer Station there were fully fifty trees uprooted or broken off, showing that there was a heavy wind while the ground was wet. Inspection of the Chiquito lines shows, however, that the swing lines stood up fifty percent better than the solid bracket construction.

The spring trail work is being pushed. About $55.00 has been spent on the Pines-to-Dam trail which McKenzie reports as in fairly good shape for travel now. McKenzie and Ole Johnson are working at present on the Chiquito trail, cutting out the down timber which put trail as well as telephone line out of commission, much worse than in an average winter.

James Roberts is preparing to start his tray mill operations at Shuteye, with a full crew, as soon as he can get in. There is still a good deal of snow there, but he hopes to get his men in by the middle of May.

The Pines Lumber Company is preparing to make a big cut this year, for the size of their mill.

Mr.Roush states that the Peckinpah Mill Company will have a crew of about 75 men — several more than usual. It looks as if there might be a prospect of a sale to that company either in the latter part of this summer or early next year.

Pine Ridge District.

John J.Terrel, Special Indian Agent, was in the district during several days of March, on Indian allotment work.

Rangers Boothe and Parkinson were at Auberry four days the first week in April, helping Price and Barker repair the line from Auberry to Tollhouse. This is a metallic line and had been constructed with the lines too close together so that they were apt to twist in a wind. The wire had to be spread in many places.

Ranger Price and wife returned from Santa Barbara on the first of April. Price had been engaged in special use reconnaissance in the south for three months.

Ranger Parkinson and wife have moved to Big Creek where Parkinson will be in charge of the Ockenden-Bymbee sale this summer.

The grazing ranges of this district will be stocked to their full capacity this year, a number of new owners of small bands having been granted permits.

Kings River District

Deputy Supervisor Jordan spent several days in this district in March settling certain range boundary disputes.

The insect infestation in Blue Canyon is not as heavy this year as for several years past, but strips of very heavy windfall will make ideal breeding conditions and we may expect an increase next year.

Boothe and Parkinson spent several days the first week of April helping repair the metallic line from Tollhouse to Auberry without which the Kings River District is entirely cut off from the Northfork office.

On April 5 the small house on the Thermal Addition burned to the ground. Fire caught on the roof, and was not discovered till the house was past saving. Fortunately no one was hurt, although the furniture and personal belongings of Ranger and Mrs.Parkinson and their parents were damaged or destroyed.

District Ranger Boothe spent several days in April riding with the cattle men in their annual roundup.

On April 20 the district ranger made an inspection trip to the summer headquarters at Dinkey. He found that the unusually heavy snow had broken down two porches on the Forest buildings and had smashed both house and barn at the cattlemen's camp, spoiling considerable hay and barley.

Jay Robinson of Dinuba, for some years a professional packer, has applied for permit to establish a store, hotel barn and feed yard at Dinkey. From that point as a base, he expects to make pack trips with tourists. A moving picture company is already planning to go back with him to get a desired background of high peaks and snow.

Estimates are being made for a bridge over the Middle Fork of Kings, near Simpson Meadow. The old ford is not usable early, and often during the summer is impassable. A bridge would be of great value, not only for forest administration but also for the traveling public.

FORESTRY AND RELATED ITEMS OF INTEREST

The Division of Forestry at the University of California has grown rapidly since its organization such a short time ago. Its teaching force now consists of two professors and three assistant professors. Special courses for rangers are to be given next winter, including general lectures as well as field work in surveying, mapping, mensuration, protection, silviculture, administration and the construction of improvements. There will be a special course for lumbermen, in logging. The course will extend over twelve weeks and will begin after the first of January. If any ranger can afford the time, such a course would be of great help to him in his work, and like all education in one's chosen profession would enhance his interest in his work. The admission to these courses will be based on two requirements: (1) Age -- 18 years or over; (2) field experience sufficient to enable the student to appreciate the instruction and to get proper benefit from it.

Professor Roth whose "First Book of Forestry" is well known to the men of this Forest, has issued a book entitled: "Forest Valuation." This book will be a first class reference book in every forest library, and to men of Forest School training will be invaluable because of the clear manner in which the subject is set forth.

The Department of the Interior has published a pamphlet on "The Forests of Yosemite, Sequoia and General Grant National Parks", written by Cary LeRoy Hill formerly Forest Examiner on the Sierra but now in the Office of Lands at the District Office. The pamphlet is beautifully illustrated and is written in the well-ordered style that makes all Mr.Hill's work so readable.

A circular letter of timber sale policy and procedure has been sent to all Forests in District 5. This was compiled in the San Francisco Office, and is the best thing of the kind ever gotten out. It covers all previous statements and instructions on the timber work, and so saves the field man the brain-racking strain of trying to remember or to dig out of the files some previous decision of great importance, when he is working up a sales case. The sales policy file may now be considered obsolete, and if headed with the timber

Manual and this circular, a man can know exactly what he needs. Moreover, it is at once detailed and compact -- nothing left out, but no unnecessary matter left in. It is of decided advantage to anyone working with either sales or any other branch of work in the timber, to see conclusions set down in a form comprehensible to anyone.

But while this circular has good, clear-cut, well-basted material, it cannot be said that no more changes will ever be necessary. Instructions must change with progress, and it will always be desirable to gather pertinent data and send it in to the District Office. It is felt, however, that as good a piece of work as this must long be used in its present shape, and will not be materially altered unless the change has first been thoroughly tried out and decided to be of marked advantage.

Dr.Sudworth has written and the Department of Agriculture has published as its Bulletin 327 a 43-page illustrated book on the spruce and balsam fir trees of the Rocky Mountain region. This good piece of botanical work should be filed in each ranger's library, beside his "Forest Trees of the Pacific Slope."

The National Woolgrower for February contains an article on range grasses by A.W.Sampson, in which the various foxtails are described. This is followed in the March number by an article on the brome grasses in which they are classe by forage value. As most of these foxtails and bromes are native or at least established in this Forest, it is of special interest to grazing rangers to read these articles.

The series of articles running in American Forestry on tree species has been most interesting. Why should not some Californian offer that magazine a similar article on the Sugar Pine, its beauty, its value, its varied uses. Another on the Big Tree should add to that series which it is hoped will be published in book form some day.

PERSONAL ITEMS

Claude McKenzie Jr. opened eyes on this world, in Fresno, March 4, but shortly after made it plain that he preferred the Sierra National Forest as a place of residence. He is flourishing now at the Noddin Ranger Station.

Mrs.Shinn spent the month of March in Niles, Oakland, San Francisco and Ukiah on vacation.

The entire force of the Sierra, with their wives, met at Southfork as the guests of Mr.and Mrs.Redington for dinner on the night of March 8. A number of the babies and certain of the grandmothers and grandfathers helped to swell the number to over forty and to fill the hotel diningroom pretty completely. After a delicious dinner which - as usual - the Southfork people managed to serve with no great apparent effort, Deputy Supervisor Jordan rose, and with a short speech handed to Mr.Redington the golden Service badge which the men of the Forest gave him in appreciation of his work here and as an expression of their affection and admiration. Later in the evening the entire neighborhood gathered at Northfork hall as guests of the rangers in a farewell dance in the course of which tears and laughter came pretty close together. It was with much regret that the people of the Sierra National Forest saw the last of the Redingtons.

Forest Supervisor - or rather District Forester -- Redington and Mrs.Redington arrived at Albuquerque, New Mexico on April 15. Edward and Redstone (the dog) were particularly glad to descend from the train. After two weeks futile search for a house, Mrs.Redington and Edward decided to go east to Evanston, Illinois, for a three months' visit with Mr.Redington's father and mother. Mr.Redington will spend the larger part of his time during the spring and summer in the field, getting acquainted with the men and conditions of the Southwestern National Forest District.

Supervisor Benedict and family motored into Northfork about noon on April 24, putting up at the Jordan Annex till their household goods arrived, April 26. Mr.Benedict is planning a series of trips, renewing acquaintance with the Forest and its people.

Dwight Cullen Birch Jr. arrived at Fresno April 29, and

is compelled by the exigencies of the situation to remain there for a few weeks. However he will transfer his quarters to the Sierra some time this month.

Raymond Tyler who has been very ill, is recovering, thanks to Dr.Pettis and the good clean air of the Sierra.

Mrs.Wofford, who has not regained her strength since her illness of last fall, is to spend some time in a Fresno Sanitarium under the care of Dr.Pettis who hopes to return her to the Sierra in good shape.

Ranger Roy Boothe is the latest to join the ranks of those owning Ford machines. Heroically regardless of its shiny new surface, he used it for an express wagon to take some of the bridge materials for the North Fork bridge from Cascada to Dinkey. Ranger Parkinson used his machine for the same purpose thus hastening the completion of that much-needed structure.

The luck of some people doesn't seem to desert them even after they leave the Service. George Cavin, for a number of years a ranger on the Sierra, had made a fifteen cent purchase at one of the Fresno drug stores, and been given a ticket entitling him to a "chance" on an auto. Of course the auto came to George. Some of us could have bought out everything in that drug-store except the fifteen cents worth, and drawn a blank.

Mr.H.J.Tompkins, formerly Forest Assistant here but for the last six years in the stream measurement work carried on by the Service and the U.S.G.S., has moved his headquarters from Berkeley to Los Angeles. This is a matter of regret to the people of this Forest, most of whom usually managed to see something of Mr.and Mrs.Tompkins and their Sierra girls whenever on leave at the Bay.

H.J.Brown, formerly Forest Assistant on the Sierra, is the proud father of a young son.

W.H.Parkinson, for three months on the Cleveland National Forest this winter, returned to the Sierra April 1 -- auspicious date for the Sierra who gladly welcomes her best scaler, but rather a joke on the Cleveland.

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Northfork

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August 1, 1916

Editor

Maurice A. Benedict

Associate Editors

Chester E. Jordan

Dwight C. Birch

Julia T. Shinn

PERSONNEL

Sierra National Forest

Maurice A. Benedict	Forest Supervisor	Northfork
Chester E. Jordan	Deputy Forest Supervisor	"
Ernest G. Dudley*	Forest Examiner	San Diego
Dwight C. Birch	Forest Examiner	Northfork
Julia T. Shinn	Forest Clerk	"
George F. Leslie	Clerk (Stenographer)	"

Mariposa District

Malcolm McLeod	Ranger in Charge	Usona
J.C.Werly	Assistant Forest Ranger	"
E.T.McLeod	Telephone Operator	"
Thomas Smither	Lookout	Signal Peak
Walter Bays	Fireman	Murphy Station
Thos.Ferguson	Fireman	Sweetwater
Lee Lewis	Fireman	Chowchilla

Sugar Pine District

W.B.Taylor	Ranger in Charge	Oakhurst
R.C.McKenzie	Forest Guard	Clover Meadow
C.W.McKenzie	Forest Guard	Burford Station
Creston I Boothe	Fireman	Miami Station
E.C.Shaler	Fireman	Crane Valley
C.Jewett	Lookout	Deadwood Peak
Josephine Caylor	Telephone Operator	Oakhurst

Northfork District

A.K.Wofford	Ranger in Charge	Northfork
E.S.Mainwaring	Assistant Ranger	Northfork
H.L.Clark	Forest Ranger	Northfork
E.T.Allen	Fireman	Placer Station
L.Herrick	Fireman	Northfork
D.E.Morrow	Lookout	Shuteye Peak

* In charge Forest Exhibit Panama-California Exposition.

Pineridge District

Frank Price	Ranger in Charge	Ockenden
C.K.Barker	Assistant Ranger	Big Creek
W.H.Parkinson	Assistant Ranger	Big Creek
E.F.Tully	Forest Guard	Ockenden
Chas.Mercer	Fireman	Shaver Station
C.P.Ryan	Jose Basin Fireman	Jose Basin
R.S.Robinson	Fireman	Daulton Mdw
Thos.Ferguson	Fireman	Mono Mdw.
Dona Price	Telephone Operator	Shaver Station

Kings River District.

Roy Boothe	Ranger in Charge	Dinkey Station
J.R.Mills	Forest Fireman	Dinkey Station

EDITORIALS

Loyalty. The esprit du corps of the Forest Service has been one of its greatest assets and the Sierra it seems to me, has always had more than its share -- due largely to the intense enthusiasm and loyalty of former Supervisors Shinn and Redington from whom we absorbed a generous quantity. There is no factor in any work that goes farther to promote efficiency than loyalty and enthusiasm to the work in hand. Ours is not an organization that depends upon dignity and aloofness to command respect for superiors in office, but rather we are drawn together by enthusiasm for the work, its present and its future. We have worked shoulder to shoulder, Forester and Guard, to establish a national institution that affects the whole nation vitally.

Now that we have become an institution, we are apt to forget these hard and trying times of opposition and to lose the close personal touch of former times. There is something wrong when any man in the organization goes so far as to criticise his superiors publicly. If he does not agree with his superior's actions, constructive criticism is absolutely necessary and is welcomed. But to be an effective organization we must weed out the men who offer only the other brand.

The Fire Season. July has come and gone with only eight fires on this Forest, on a total acreage of 266.55, practically all of this being in brush where no attempt was made to reduce the acreage. It cost a total of $152.00 to put these fires out before they reached timber. August is the month of extreme danger but we are going to beat the July record with a smaller force than we have had for years.

Preparedness. A bridge over the North Fork of the San Joaquin went out during the winter storms, another over the South Fork of the San Joaquin and a third over the North Fork of Kings. They had to be replaced at once to make it possible to use certain cattle ranges to which stock had been allotted. These bridges were known to

be defective, but this office had no estimate of the cost to replace them. In fire protection a lack of similar information would have been a sign of extreme inefficiency. To correct this weakness, there has been assigned to Deputy Supervisor Jordan the task of preparing a complete Improvement Plan that will show in detail all improvements needed for as long a period in advance as can be reasonably forecasted. To you rangers on the job, every one of you, this means that your minds must be constantly alert to note needed improvements in your districts, so that Jordan can discuss them with you and can correlate them in a detailed and comprehensive plan for the Forest.

Save the Odds and Ends. Strangers, especially foreigners, shake their heads over the waste on our western forests. We sigh, ourselves, when we hear of the winter suffering in large cities and remember our uncounted cords of waste wood. Telling ourselves that it is the fault of our "magnificent distances", that the transportation cost would far exceed the value of waste wood even in our nearest towns, does not help much.

These foreigners, especially the Swiss and the Russians, tell of the winter work of their peasants with carving tools and of the valuable toys made from small pieces of wood.

Now of course the time is many generations off when a sufficient population will live during the winter in our Forests to follow any such lead, but certain items of waste are even now being turned to use. Years ago posts were made from what had been the waste redwood of the "Old California Mill" . This year more of that "waste" has been manufactured into shakes, and the refuse of the refuse -- the waste from the post making -- has been worked up into grape stakes.

As for toys, one of our neighboring towns, Madera, has a mill devoted largely for some years to the making of doors and windows, mouldings, inside finish and casings, which this year has tried manufacturing toys from the odds and ends that accumulate at a mill, and has made a great success of it.

What is a Forester ? It would be good for the soul of each individual in the Service to read T.E. Olmsted's article in the May TIMBERMAN. We are too prone to bend to the wind of opinion and need to be told that "the forester's work is in the forest" and that "his highest duty and most difficult work is this problem of using a natural resource without destroying it."

CONTRIBUTED ARTICLES

Special Use Problems
by
Dwight C. Birch

During the past two years, the Sierra Forest has seen a rapid development of the special use business. With this development has come a new set of conditions and problems of policy to solve, and the one great problem that has called for more thought, perhaps, than any other is the basis of charge for the various classes of special use permits.

The principle of making a charge based on a unit area of land (as a pure land rental) has worked well for those who lease lots for summer residence purposes only. The sites suitable for residence purposes are classified according to their accessibility and the desirability of the location, and a rental charge is made according to their value. But in granting a business concession to a store keeper , hotel keeper or transportation company several questions enter that are not easy to settle at once. The nature of the business may be such that a very large income may be derived from the use of a small area of land while the man next door may need a large area to carry on a much less profitable business. Our experience has been that each concessioner thinks the price he pays for his concession should bear some relation to the amount of income he has from his business. So why should we not adopt something of the plan used in making charge for a water power permit and base the tax on the net income ? The principle is theoretically sound but putting it into practice is somewhat difficult. The important point is that the charge on any business concession represents a certain very small percentage of the net income from the business, and under present conditions , the judgment of the Forest officer should not go far wrong in placing this arbitrary charge on any one class of business.

Another serious question is that of placing a restriction on the number of concessions in any one class of business. This seems necessary in certain cases to prevent cut-throat competition and to insure good service. To offset the criticism that a monopoly is granted, the Forest Service

should adjust the prices to be charged, and see that they are reasonable.

The government should take the lead in opening up areas that are of value for special use purposes. Considedable revehue is derived from the special use business and a proper development-investment is financially sound as well as a big service to the public. Good roads, trails and tourist pastures are the first essentials and in suitable locations lots should be laid out for summer residences resorts and other related lines of business.

In regard to water supplies, it has been the experience of this Forest that Government ownership gives the greatest satisfaction and the investment is easily retired by the increased number of permittees on account of the better water supply. Further than this, the Government is not in a position to do much in the line of developing resort areas.

Fur-Bearing Animals on the Sierra

by

W.H.Parkinson

(In view of the fact that war prices on furs are very high, and that therefore much trapping may be done this winter, some notes on the fur-bearing animals of the Forest are printed. Mr.Parkinson probably knows more about them at first hand than anyone else on the Forest. The Editors.)

The Sierra National Forest is peculiarly adapted to the requirements of a great variety of fur-bearing animals, and I shall try to touch on the habits and value of some of the principal ones:

We have one variety of the Lynx, or bob-cat. In the foothill country and as far up as the great pine forests they are quite numerous. In appearance they differ considerably from the true northern lynx being smaller and of coarser, shorter fur. Their pelts are worth hardly more than one tenth as much as those of the true lynx. Above an elevation of 5000 feet they are few in number but are almost a third larger. This lynx is almost a third larger . They are entirely flesh eaters subsisting on rodents and game birds especially quail, rabbits and squirrels. In the higher altitudes he lives mainly on pine squirrels (which should endear him to the forester) Very occasionally he manages to kill a young fawn.

The big cousin of the lynx, the California Lion - known in the eastern states as panther, in the northwest as Cougar and in South America as the puma - is too well known to require description. He preys largely on the deer but will only eat his own kill, so is hard to catch except with dogs. He has stringy, hairy "fur" of no value except for rugs. The average specimen weighs 125 pounds and measures seven and a half feet from tip to tip. They are not numerous on this Forest except near the Yosemite Park boundary where the protected deer attract them.

Despite the general impression that there are two kinds of bears on this Forest, there is really but one - the little brown bear. The few dark or black ones are only freaks. Every one wants to kill a bear. Wild stories of the fierce nature of cinnamons and grizzlies cause all bears to be much sought by the collectors of fame and glory, but this brown fellow is the most timid of our fur-bearing animals. Like his northern cousins, he hibernates, but may come out during any mild spell and return to his lair when the cold closes down again. He feeds upon carrion, insects, nuts, grass and berries. Now and then when a favorable opportunity comes his way, he takes toll of a band of young pigs but no other kind of livestock suffers from his depredations. His fur is fairly fine, and a pelt brings from $10 to $25.

Coyotes I pass over because they are so well known. They help keep the deer down, but the fur, especially of those in the higher mountains, is fine and soft. A good pelt brought from $10 to $25 in New York, cured, last month. A green hide used to bring $3, but costs twice as much now, because it is in demand to line the coats of the soldier boys in the trenches.

We have two distinct foxes, the grey and the red. The limit of the grey is 5000 feet while the lower limit of the red is 7000. The latter stays just as high as he can get in summer coming down to 7000 in winter. The red fox freaks more here than further north. The red fox "freaks" more often than he produces pure red fellows. These freaks are called "cross foxes", though not a cross between two species. The silver and the black are both freaks from the red, and are both rare on the Sierra. I caught one pure silver in 1913, a very fine red and several "cross", but never a black. There is a tradition among trappers that the reason for the scarcity of black foxes is that the mother kills them because they look so oddly unlike the rest of the litter when they are born. Whatever the reason, they are certainly rare. Before the war demand raised prices, a grey fox skin sold for $1.50, a red for $5.00, a good cross for $25 and a silver for from $100 to $1500. Naturally my one silver pelt

spoiled before I got it out of the mountains. The silver fox is worn by the nobility as well as the royalty of Europe.

Of course you all know about the coon -- plenty of them in this forest and not so bad for a cheap fur if taken in the cold season. It is worth from $1.50 to $3.00.

Badgers are more numerous in the higher reaches of this Forest than is usually supposed. Their pelts are worth from one to two dollars each, the hair being use exclusively in the manufacture of shaving brushes.

The otter, a valuable fur-bearer, is found on the main streams of this Forest -- the Merced, San Joaquin and Kings -- besides on those of the mountain lakes that are well stocked with fish. Fish is his only food and he prefers to do his own fishing, refusing to take bait of any kind. Though a water animal he travels long distances by land. He is web-footed, and you simply cannot wet even a dead one. The fur is fine and dark, usually bringing from $12 to $30 a pelt, raw.

The "mountain beaver" or "blue beaver" is an interesting little creature of no market value for fur. He is very shy, working at night to collect his bark and roots. He has a shorter tail than the mustrat but is about the same size.

Of the weasel tribe, we have on this Forest the weasel proper the mink, civet cat, marten, ring-tail, fisher and wolverine, listed in order of size. The weasel is about the size of a small squirrel; the wolverine weighs about 50 pounds. I have caught a number of each of this tribe on this Forest. The Fisher is the most valuable, the skin being worth $25. The marten brings $15, the wolverine $10, the mink $5, the skunk $1.75, the weasel - white - $.75; ring-tail $.50 and civet $.25 Of course these are "befo' de wah" prices. The whole tribe is peculiar in its weapon of defense, Mother Nature having provided each of them with scent glands, no two alike but all offensive and effective. That of the wolverines is perhaps the worst but I won't be positive -- it is merely a matter of taste, or rather smell. They are all BAD. But aside from the otter and the best foxes they are the highest priced furs to be found on this Forest, and all are now in demand.

HEADQUARTERS NEWS

Assistant District Forester Headley, Chief of Operation for District 5, reached Northfork on May 10 and staid on the Sierra for several weeks. Mr.Headley has not before spent so much time on this Forest. While here he not only went over the plans for future development, and the personnel files, but inspected the Huntington Lake and Cascada special use areas, and the proposed site of the Simpson Meadow bridge. Incidentally he saw much of the way in which the Forest is handled, both from the Supervisor

office and from those of the two southern District Rangers.

On the evening of Wednesday July 12, an entirely unexpected guest arrived at the Supervisor's office. This was Mr.J.G.Falck, the Property Auditor. Mr. Falck staid at the Northfork office for two days firmly refusing to fight fire, inspect camps or otherwise depart from the strait and narrow path of his duty which lay entirely with the care and records of the non-expendable property. The two days were more than warm, but Mr.Falck saw everything in the Office attic, in the blacksmith shop, in the tool house. He saw every entry on the records. Moreover he saw each item that should been on the shelves or hooks but was not -- and yet such was his personality that the visit was delightful. Another time it is hoped there will be fewer notes necessary, and that the Sierra property custodian may enjoy Mr.Falck's good stories without having a part of his brain busy trying to guess who took the Abney level without mentioning it.

Since the last number of the RANGER went out, Supervisor Benedict has been over the larger part of every district of the Forest.

The Cache, the Sevier and the Coconino Forest publications reach us with regularity, and to the list has now been added the Log of the Lab, issued by the Madeison Laboratory. This will prove of great interest , as the doings of the laboratory are not known to many of us.

It is with regret that note is made of the discontinuance of the San Joaquin Light and Power Magazine. The streams supplying this great Company's power are all within the Sierra and Sequoia Forests, and the work that power accomplishes as well as the personnel of the power-houses and offices have been of constant interest to the force of the two Forests. It is sincerely hoped that the Company will feel able to publish the magazine again when the present "tightness of money" has somewhat relaxed. Is this one of the items in our war account ?

Assistant District Forester Woodbury, with Mr.Ralph Hoyt, entered this Forest early in July, discussed insect control matters, visited the Ockenden-Dunbee and Big Creek Tray Company timber sales, then went across the mountains to the Inyo and Mono Forests, returning via the Tioga Road and Yosemite Park to Sugar Pine and later to Northfork. This is the first time in many years that Mr.Woodbury has combined business with pleasure on a trip across this Forest.

The income from the resources of this Forest during the last fiscal year was $70,915.14, while the allotment for all Forest expenses, salaries, improvements and fire suppression was $39,334.27. This balance of 31,580.87 looks good. Aside from the saving made by strict economy - which after all was not large because from the days of Gifford Pinchot the two most important words in the Forest bible have been economy and efficiency -- the two greatest factors in forming this balance have been increased timber sales and increased water power development. Of the total timber sale income in District 5, $101,839.43, this Forest is responsible for $21,749.36 or a little more than one fifth. The Plumas, with timber sale income of $28,343.53 is the only Forest selling more timber than the Sierra. Figures certainly talk, and as more and more people realize that the Forests, besides preventing timber waste, furnishing free a large amount of timber to settlers and farmers, protecting the water sheds for the sake of the irrigation systems and the power plants, providing summer pastures for the growing of beef and making accessible thousands of acres of wonderful reareation grounds for the people of the hot valleys, is producing an income, they will rejoice in such a glorious possession and offer prayers of thanks for the foresight of the men who urged the reservation of these areas in the public domain.

It has been noted all up and down the western foothills within this Forest that quail are unusually abundant, and that in spite of an unusually severe winter.

DISTRICT NEWS

Mariposa District.

On June 17 there was a joint meeting of the Stockmen's Association and the Fire Protective Association at Chowchilla Station, Supervisor Benedict and wife being present. The attendance was good, much interest being shown in both associations. After lunch had been served under the pines by the ladies of the associations, the meeting was called to order. Many topics of interest were discussed and new officers were elected by both associations. The vote for the continuance of the fire protective association was unanimous and several new names were added to the membership.

Mr.Benedict and wife spent the evening of the 17th and part of the following day at Mariposa Station before re[illegible]

to Northfork.

The Signal Peak Lookout went on duty June 15, reporting two fires on the Sugar Pine holdings on the 16th. The Chowchilla, Sweetwater and Signal Peak division guards went on duty July 1.

The Devil's Gulch and Granite Creek trail was completed in May, approximately two miles of new trail being constructed. This trail is a convenient short cut for stockmen and others wishing to cross Devil's Gulch and opens up the country to the Merced River.

A fire started three miles outside the Forest on July 12, on the west side of Delong Creek, burning over approximately 3200 acres of brush and some grass land. Then on the evening of the 13th , fanned by a strong wind, it jumped the Chowchilla river in two places, and began burning over Forest land on Miami Mountain, burning 160 acres of lightly timbered land and 80 acres of brush before it was under control.

The grass and hill feed on most of the ranges is below normal on account of the dry spring, but cattle are looking fairly well.

Sugar Pine District

On June 8 Ranger Taylor left with a crew of five men for the North Fork of the San Joaquin to rebuild the bridge across that stream which went out during the winter. Assistant Ranger R.C.McKenzie was in charge of the work. It took fifteen days to get out timbers and build the bridge which is a 52-foot span constructed on the king and queen truss plan. The cover illustration of this number of the RANGER shows the bridge under construction. It replaces the old "soldier bridge" constructed years ago while this part of the Forest was a part of the Yosemite National Park.

The Clover Meadow public pasture has been abandoned and the fence moved to Soldier Meadow. The construction of the fence at Clover, we regret to acknowledge, was an error of judgment. The water supply failed early, and the feed was not nearly as good as at Soldier Meadow. The mistake has been corrected, although at some cost. Another time this district looks before it leaps.

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77 Corral Public Pasture was built and ready for use on July 21.

On July 17 District Ranger Taylor left for the back ranges on a grazing reconnaissance trip, meeting Deputy Supervisor Jordan and party at Keltie Meadow. They made an extensive survey of the ranges, taking three weeks for it. Feed is above average and stock doing finely.

Now that the Appropriation Bill has passed, the trail crew will start at once for the back country. We expect to have a first class trail down the North Fork by the middle of September.

Ranger Taylor made a flying trip into the back country August 14 to lay out work for the trail crew, returning the 16th. He advises all uniformed rangers to follow the District Office suggestion of wearing a red bandanna around the Service hat, as hunters are more plentiful than deer.

Northfork District.

In order to test the effect of the maximum summer heat the Office force did not move to Ellis Meadow this summer. Fortunately with the exception of three short hot spells it has been a pleasant summer.

The fire season to date has not been a bad one in this district, four Class A and one Class C-1 being the record. However, the opening of the deer season may increase the risk to some extent. The large brush fires on our west boundary have been conspicuously absent so far this year.

Range stock is in fairly good shape for this time of year, but as there were no late spring rains and no summer showers at all the ranges are drying up fast and will be very short by the close of the grazing season. Several of the stockmen plan to gather their beef cattle by September 1 and there is certainly good beef on the ranges.

The timber sale business in this district is slightly below normal this summer. However, Roberts' tray mill is making a fair cut and Mr. Merriman is cutting out a small shake sale, while Bogard Brothers and R.D.Langworthy are working on shake sales from dead timber.

On July 15 Deputy Supervisor Jordan and District Ranger Wofford made an inspection trip through Chiquito Basin and vicinity, checking up the condition of various permanent improvements and of grazing ranges. The bridge across the San Joaquin at the mouth of the Chiquito was found to be in need of repair, one of the sills being quite rotten as was also one end of the middle stringer. The sill and stringer will both be replaced before wet weather sets in.

The bridge across the Chiquito was also in bad shape, needing two new truss timbers and a new middle stringer. Four new truss timbers were put in last fall, the other two being considered good enough to last some time, but these two must now be replaced.

Pine Ridge District.

To date only one fire has occurred in this district and it burned over only about half an acre. Although some of the credit is due to luck, I believe that much more is due to the publicity methods of the Service . This system could be improved if each of us put in his share of work. Let's get busy.

On June 10 work was started on the Huntington Lake water supply system. Two separate systems were installed, supplying water to the special use areas of Huntington Lake. Two-inch pipe was used, 1 line taking 6700 feet and the other 1800 feet of pipe. An unlimited supply of water for domestic use is now available for all lots that have been surveyed.

Gene Tully and family are at Shaver with us this year. Gene is handling the grazing and tourist work in the back country. It seems like old times to see his cheerful countenance around.

On June 26, the Summer School of the Fresno Normal opened at Huntington Lake with an enrollment of approximately 150 students. During the six weeks that school was maintained the vicinity of Huntington Lake assumed the appearance of a small city. Many hiking trips were indulged in by the students, some of whom climbed Kaiser Peak, or went to Vermilion Valley or to the Lower Hot Springs. At the request of Superintendent McLean, addresses were made by L.H.Whiteman and C.A.Kupfer of the District Office. All the students seemed to have had a jolly time as well

as a profitable school session, and there is no doubt that the Fresno Normal summer school session at Huntington Lake will become a permanent institution of state-wide interest.

During the past two months the Movies have been very much in evidence both at Cascada and at Huntington Lake. The Fox Film and the Universal people have both had crowds here, the former fifty-six, the latter 24. It is claimed that for variety of scenery that can be screened the vicinity is unsurpassed.

Ranger Barker spent the first ten days of June as the Deputy Supervisor's right hand man, helping build a new bridge. This was constructed on the site of the old one which went out during the winter.

Leaving Shaver on June 18, Supervisor Benedict and Ranger Price spent a week in the high country of the Pine Ridge District. A number of grazing ranges were carefully gone over and data obtained for two proposed improvement projects.

Kings River District.

In May Mr.Headley visited this District and went into the Middle Fork canyon to estimate trail cost , decide on the location of the proposed Simpson Meadow bridge and get a first-hand impression of that tourist region.

Ray Mills is the District Ranger's chief assistant at Dinkey this summer, repairingfences, telephone lines, etc., within reach of the telephone when the District Ranger is elsewhere.

On June 10 the official headquarters moved to Dinkey for the summer. More down timber - and consequently more damage to telephone lines and trails had occurred during the winter than at any other season since the Dinkey Camp was established.

Jay Robinson started a resort and packing business this year at Dinkey. At the same time he is doing all the packing for the Muir Trail and the Simpson Meadow Bridge projects.

The trail crew under the able direction of Ranger J.M. Hughes, left Dinkey July 1, and by August 10 had covered

about ten miles of heavy trail repairs, constructed four miles of new trail part of which required much heavy blasting, and built a suspension bridge across the Middle Fork at Simpson Meadow.

The time of Fireman Blake , stationed at Dinkey, has been utilized duringthe absence of fires in building a much-needed tank house, cleaning and protecting the spring and putting up a wagon shed.

On August 1 Supervisor Benedict came to Dinkey to go over the trail work, and staid to see the Simpson Meadow Bridge completed. While on the Middle Fork, he, with Ranger Hughes and District Ranger Boothe, walked to Muir Pass which is at the end of the stretch of Muir Trail construction work planned for this year. They were out two nights on the trip.

Fresno County funds to the amount of $600.00 have been spent in changing grades on the Dinkey road. As a consequence the auto travel has increased to an average of four or five a day. This would seem to warrant the placing of a few cans of fry each year in Dinkey Creek. Fishing was fairly good early this spring, but the stream was soon fished out.

On the opening day of the deer season, a fine buck was killed by a near-by camper. What ? Oh yes, of course.

No fires in the Kings River District to date this summer.

FORESTRY AND RELATED ITEMS OF INTEREST

The American Lumberman for June 17, 1916, contains a resumé of the brief filed for the Western Forestry and Conservation Association with the Federal Trade Commission, on the value of logged-off land. After going over the subject very thoroughly, Secretary Allen concludes: "While agricultural lands are properly regarde of importance, there is also necessity for earnest attention to reforestation, either by the State or the Government, or through State laws making it possible by the individual."

Here in the best of the California yellow and sugar pine belt, the cutover land is at too great an elevation for successful agriculture, and forests grow but slowly. Reforestation hardly a project to be undertaken here by the individual, bu

surely either State or National Government should undertake it for the sake of the future population. Little cutover land is assessed at more than $1.25 an acre, but the taxes eat at the rate, are a steady drain upon the lumber companies. It would seem that if a bill could be introduced in Congress providing for the purchase of logged-off land at $1.00 an acre, most lumber companies would gladly avail themselves of the chance to get rid of unproductive property, while the Nation could well afford to buy at the low price and reforest.

Landscape Architecture for April lists a tempting group of articles on Forests and National Parks by men inside and outside of the Service. One by E.A.Sherman of the Washington Forest Office, entitled "The Forest Service and the Preservation of Natural Beauty" and another by the famous landscape architect Frederick Law Olmsted on "The distinction between National Parks and National Forests" should be of especial value and interest to us.

The Timberman for June illustrates a new fire finding map originated by Professor Knapp of the Forest School at Duxbury, Mass., and tried out last summer on one of the National Forests. It seems to be a decided improvement over our present fire-locating maps.

The same number of the Timberman has a most interesting article on the forest resources of Serbia. The writer believes that the forests of Serbia, once a clear outlet to the Mediterranean is secured, will supply a large part of the south-European market. The article is effectively illustrated.

The August Timberman illustrates the hydroaeroplane used by a volunteer forest fireman near Trout Lake, Wisconsin. The machine has an average speed of 62 miles an hour in the air and 40 miles an hour in the water, with a climbing capacity of 1000 feet in three minutes. At a height of 1000 feet the observer can survey 200,000 acres of forested land. While this may never be practicable in the cross-currents of a mountainous forest, it is a long way in advance of the "josh" poems of a few years ago which suggested air ships for fire patrol men.

PERSONAL ITEMS

When Mr.Headley visited the Forest in May, he was accompanied by his wife and young son Robert who camped in the Supervisor's guest tent for several weeks. Mrs.Jordan and Mrs.Benedict entertained the women of the ranger force and of the neighborhood during that time, so that we all had the pleasure of meeting Mrs.Headley personally.

Mrs.Jordan and Mrs.Wofford went into the high country with their husbands in the latter part of July. Both of them are such good campers well accustomed to doing their share of saddling and packing as well as everyone's share of the camp cooking that they are a decided Forest asset. Mrs.Wofford is entirely recovered from the illness reported in the last Ranger , as her appearance on returning from this trip amply proved.

During July, August and September Mrs.Pearl Boothe, regular telephone operator at Oakhurst will be at Miami Station with her husband who is stationed there for the summer. Miss Josephine Caylor takes her place at the Oakhurst switchboard.

The time of Lincoln Herrick, forest fireman for the Northfork-Southfork district, is being utilized between the infrequent fires at the switchboard. Mrs.Herrick remains in Fresno except for occasional flying visits, but their daughter Mary has been at Southfork for all her school vacation.

Mrs.H.L.Clark's mother has been spending some weeks with her at the Sight Rock Station.

Robert Kloppenberg, Mrs.Benedict's brother, reached Northfork about the first of August. As it happened the Service had immediate need of a man to replace one who had resigned. Mr.Kloppenberg was therefore sent on the next day to join Tom Ferguson - son of Andy Ferguson - in fire patrol work in the back country. When not on fire duty these men are putting in long hard days at trail repairing.

FORESTRY

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Northfork

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Editor

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Associate Editors

Chester E. Jordan

Dwight C. Birch

Julia T. Shinn

PERSONNEL

Sierra National Forest

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Chester E. Jordan	Deputy Forest Supervisor	Northfork
Ernest G. Dudley*	Forest Examiner	San Diego
Dwight C. Birch	Forest Examiner	Northfork
Julia T.Shinn	Forest Clerk	Northfork
George F.Leslie	Clerk (Stenographer)	Northfork
Flora H.Leslie	Telephone Operator	Northfork

Mariposa District

Malcolm McLeod	Ranger in Charge	Usona
Jesse C. Werly	Forest Ranger	Usona
Emma T.McLeod	Telephone Operator	Usona

Sugar Pine District

W.B.Taylor	Ranger in Charge	Oakhurst
Pearl Boothe	Telephone Operator	Oakhurst

Northfork District

Audie E.Wofford	Ranger in Charge	Northfork
E.S.Mainwaring	Forest Ranger	Northfork
H.L.Clark	Forest Ranger	Northfork

Pine Ridge District

Frank Price	Ranger in Charge	Auberry
C.K.Barker	Forest Ranger	Big Creek

*In charge Forest Exhibit Panama-California Expos

Kings River District

Roy Boothe — Ranger in Charge — Trimmer

The Forest force has shrunk from the 37 of the summer to the 18 of the winter force, fire danger being past and most of the timber sales closed down. Lumberman Elliott will be on the Forest until December 15, on timber survey.

EDITORIALS

Progress or ? When the Forest was young and the administrative work comparatively small, we had from 20 to 25 year-long rangers, and couldn't see how we could get along without them; but now, when we are selling $35,000 worth of timber a year, have numerous special uses, more grazing, more free use and settlers' sales, in fact with administrative work more than doubled and the maintenance of our improvements almost swamping us, we are getting along with ten year-long men and three six-months men. No wonder the ranger is getting uneasy for fear a mechanical, gas-driven ranger will be invented that will take the place of the old guard that is left. He looks in the Field Program and sees more and more men added to the Washington and District Offices, but he must sit up nights trying to keep the Supervisor from taking away the only man he has. What's the answer ? Are we running towards paper forestry ? Are we practising economy and losing efficiency ? Are we giving the Forest proper administration ? What is going to happen to our improvements which we value at $75,000 if we cannot put time and money into their upkeep ? Is the public going to stand for such rigid economy ? And will not our grip of the whole situation be gradually lost?The editor has some very definite opinions on these criticisms of Forest administration as practised, but before expressing them, he would like to open the RANGER to a wholesome discussion of the subject by the men who have had very little hand in formulating a policy which they must carry out.

Fire Study of the protection problem on the Sierra has shown us that

1. The employment of a large number of patrolmen does not materially reduce losses.

2. The travelling public is not a serious fire risk.

3. The losses remain more or less constant and are high or low as the incendiary is active or inactive.

4. Unusual situations sometimes arise that cannot be foreseen and must be met at the time of their occurrence.

With all our study and planning, we are at about the same place every year, and it seems that in order to progress we have got to take a new line of action. We know that there are only two causes for fires, one human and the other lightning. Lightning is not a serious factor and is taken care of easily by our organization.

Human elements are constantly changing, but outside of the incendiary and an unusual circumstance which comes under an emergency and is handled as such, our organization sees to them without difficulty.

Then with but this one serious factor, why is it that we cannot make noticeable progress ? The formation of fire associations has solved the incendiary situation in some localities and has been a failure in others, depending on the reception of the principal of regulated burnings by the individuals in each community. It is an elusive problem because incendiarism is a condition of mind which usually is not discovered until after losses occur, and then only in an indefinite sort of way by the process of elimination. Quiet will reign in a district one year , and the next it will be seething with incendiarism. When the causes are sifted down, it will always be found that our methods of administration or personal enmity is at the seat of the trouble. Some of these causes are:

1. Desire for revenge on a neighbor or ranger.
2. Desire to produce forage
3. Desire to improve hunting.
4. All-around cussedness.

There is a possible way to combat each phase, and to be successful it is seldom wise to control them by force alone. I believe it is possible to foresee some of these outbreaks by knowing the people well enough to know what is troubling them and making it a point to correct the trouble before it reaches the stage where it results in timber losses. You rangers can, by being alert to what is said and thought in your districts, often head off an outbreak of this year or the next. This is real prevention, and while it is not so spectacular as tracking him with hounds and catching him with a lighted match in his hand, it is far more worthwhile.

Past and Present Improvements on the Sierra National Forest

by

Chester E. Jordan

We all know that "permanent improvements" play quite a part in forestry, although they are not of such importance that forestry would be at a standstill no improvement appropriation being made for any one year. If the same thing should happen for many consecutive years, however, the practice of forestry would have to stop.

Improvements have their importance in every branch of the forest work, from silviculture down. A great part of the rangers' time in the past has been devoted to this class of work, for the reason that it has been absolutely necessary if the Forest Service was going to care for the needs of the public and open up the forest resources. The improvement appropriation has always been inadequate, so in many cases it has been necessary to spend an entire sub-allotment for material and - during the time of year when administrative work was light - do the construction work ourselves.

We have been going through two stages in improvements: the past has been the time of make-shift construction - temporary work; the present and the future are to see more permanent work. At first improvements were made where the demand for them was greatest at the time. Rapid changes were being made in organization and in policy, and it was not deemed advisable to make very permanent improvements until conditions were more settled. So fences were built with the least amount of material possible , trails and telephone lines were laid out over the routes of least resistence, and other improvements followed the same general style of construction and even so only those were considered that were absolutely necessary for the handling of what was then the most important business of the Forest. Such things as piping water into dwellings, or installing bath tubs or any other of the accessories were not even mentioned. And yet, knowing the conditions, the men were content.

However, that preliminary stage has been past for some time. The emergency needs have been cared for, and there is now opportunity to consider permanence in all improvements. When the annual estimates are made, all improvement projects are very carefully considered with regard to their relative importance. Standards have been made for nearly all branches of the work, and as repairs become necessary on formerly-constructed projects, they are brought nearer to the [illegible]

standard of permanence.

As the Forest resources continue to be developed, there come new needs for improvements, such as the laying out of special use areas, with needed water systems, roads, etc; the opening up of new tourist areas, entailing the construction of trails and bridges and the fencing of public pastures.

Because of the pressure to produce the best result in the least time and at the lowest cost, a marked progress has been made in all lines of improvement work. Without a doubt, the Forest Service has established the best tree line telephone system ever used, due to the constant meeting of actual conditions.

Our trail construction shows a decided advancement. When work is begun now, on a main trail, only as much of it is planned for each year - including the blazing and signboarding - as available funds will permit, considering maximum grade and standard width of tread. When a trail is built under these requirements, it is a pleasure to all who come across it, both during construction and when it is in use afterwards. Gradually this type of trail is opening up much scenic country that has been hidden from the view of the average tourist. Our special use improvements are making it possible for great numbers of people to have summer homes in the high mountains; the construction of solid trail bridges allows the mountain traveller to cross creek or river though the stream be running full.

The Forest telephone lines, though built primarily to increase the efficiency of Forest administration, are a great convenience to the traveler who wishes to keep in touch with his family or business affairs.

Thus not only the Service, but the public that has business dealings with the Service, and the people who come to the Forest for recreation, all share in the benefits derived from the "permanent improvements" that are steadily increasing in number and in value on this Forest.

The Tray Mill Industry of California

by

Dwight C. Birch

The early fruit growers of California devised the scheme of drying fruit on trays made of split sugar pine shakes. Such trays were 30 inches wide by 36 inches long. The uneven edges of the split shakes did not make a tight enough tray to prevent

the leakage of raisins, so that with the growth of the raisin industry a strong, close-fitting tray was needed.

The vertical-grain sawed tray: This tray was the answer to the raisin growers' demand and was put on the market about 1898 by the Humphrey Bros. in Fresno County. Since that time the demand for this class of tray has rapidly increased until at the present time - according to E.G.Dudley who made a careful study of the industry from the growers' standpoint - about 2,000,000 vertical sawn trays per year are needed in and about Fresno County.

As the raisin industry has centered around Fresno County, the tray mills, which are dependent on the raisin industry, have most all located in the Sierra National Forest which is naturally the local source of material for the wood-using industries of Fresno County and neighboring counties.

In 1898 the Humphrey Bros. started that first tray mill on what is known as Pine Ridge. Their average output was about 250,000 trays a year. At present there are five tray mills operating within the Forest, with an annual output of 1,500,000 trays a year. This accounts for about three fourths of the sawn trays demanded. Most of the remainder are slash-grain sawn trays made by the box factories. The slash-grain boards are not nearly so strong as the vertical-grain, and their popularity , although their initial cost is less, is decidedly on the wane.

Utilization in a tray mill is attended with a great deal more waste than is usual in saw mills. The timber must first be split into bolts about 6" x 12" and 26 inches long, practically free from knots. Thus the lower grade of timber cannot be used at all on account of the many knots.

The problem of handling timber sales to tray mill operators has been rather a perplexing one on account of this poor utilization. The waste product is fit only for fuel, and the expense of getting it to market prohibits its use for fuel. The system of marking has therefore had to be changed from the usual practice in marking saw timber. About 40% of the stand is taken out, and only the first grade trees are cut. The practice of good silviculture, however, is not neglected, and the decrease in the grade of timber left on an area is made up for by the increased stumpage price to the tray mill.

Three of the five tray mills operating on the Forest are operating under timber sale contracts and a fourth one has applied for National Forest timber. It seems probable that the regular output of trays from National Forest timber on this Forest will average at least 1,000,000 trays per year and with close utilization will represent a cut of 2,750,000 ft. B.M.

per year.

The fostering of the tray mill industry of California is left to the Forest Service. The problem of supplying this local demand and at the same time getting the most conservative use of our timber is by no means an easy one. The local demand is from a real need that should be supplied but at the same time met in a way that will obtain the greatest possible permanent good.

Special Use Business at Huntington Lake
by
Claude K. Barker.

The past summer has seen a rapid advance in the special use business around Huntington Lake, the beautiful artificial lake, five miles long and from a third of a mile to a mile wide, formed by the damming of Big Creek for power purposes. Within easy reach of Fresno and about 7000 feet above the hot valley, it is becoming the favorite location for summer homes, between twenty-five and thirty new permits having been issued this year. A good water system has been installed for the use of the Normal School, the tent camps and the summer homes.

But it is not always easy to locate people on lots possessing all the good points desired. In one case, a full day was spent with a would-be permittee who wanted a "home on a rocky point". When a round rocky point was reached, the home-builder wanted a good smooth place for a house and yard on it. But though the search was continued till nightfall, we had no success in finding a rough rocky point that was smooth on top.

While showing another party lots, we happened to stop on a meadow. While standing there, the mosquitoes nearly ate us up. At once the applicant decided that he must have a meadow where there were no mosquitoes, for his lot.

The next lot desired was one with a great many big trees on it. It was easy enough to locate several forested lots, but upon seeing them this applicant informed me he would simply be afraid to live under such big timber. What if it should fall! So the search for his indefinite ideal continued.

Another hard lot to find was one with large timber and a swiftly running stream very close. The swift water was desired because the applicant "could sleep so well" where he could hear running water and the sighing of the trees. When the best lot with the above specifications was shown him, he "could never stand to be near such a roar," and "it must be terrible among those trees when the wind blows!"

The John Muir Trail
by
Roy Boothe

The 1916 Muir Trail Crew has completed another season's successful work in the Middle Fork of Kings River Canyon, where a section of the John Muir Trail is being built by State funds under the direction of the Forest Service. Ranger J.M.Hughes was in charge of a crew of thirteen men including the cook, working from July 1 to September 30. Nearly half of this time, however, was spent in doing some heavy repair work on the old Tehipite Trail, constructing about four miles of trail between the old ford and the Simpson Meadow, and putting up a cable bridge across the Middle Fork just below the meadow. The balance of the time was spent in continuing the new trail from a point one mile below Palisade Creek where work was left off last season to within about two miles of Muir Pass, a distance of approximately ten miles

Next season the Sierra Club expects to visit the Middle Fork Canyon, going in over this trail from the terminus of the San Joaquin and Eastern, by Blaney Hot Springs, Muir Pass and Grouse Meadow and coming out by Tehipite and Dinkey.

The scenic attractions to be found along the route of the Muir Trail are probably not equalled on any other high mountain trip of the same length in the state - or perhaps, for that matter, in the United States. Starting as it does at the beautiful Yosemite Valley and ending at Mount Whitney, the highest point in the United States, practically the entire route is through country of unsurpassed scenic beauty. It is hard for the mind of a Forest Ranger, accustomed as we have been to small appropriations and scheming and skimping to stretch them out to their utmost capacity, to grasp such a big job as this and justify the expenditure of so much money as will ultimately be required to complete the job as planned by the State Engineering Department.

Considerable publicity has already been given this trail, and much more will be necessary in order to interest enough people in the high mountain country to warrant the expenditure of the large sums necessary to construct and to maintain in good passable condition a trail through this long stretch of exceptionally rough country. A condition that will tend to hold down to a small figure the number of people using the trail each season is the number of stock - both saddle and pack, - needed for a satisfactory trip through country of this character. From two weeks to two months should be taken for it,

and this means a comparatively large ratio of stock per person -- mountain stock, small and wiry, not Valley stock unused to steep climbing and rarefied air. However, here's hoping that a steady continuous appropriation will be forthcoming from the State Legislature for the construction and maintenance of this wonderful trail. Some way will be found to get people over it.

The Morning After

It will be remembered that after the earthquake and fire of 1906, an irrepressible San Franciscan bragged joyously in verse of the "damndest, finest ruins that ever were. Something the same feeling is in the air this morning of the 19th of September at Northfork, now that the five large fires are under control leaving some 6000 acres black and smoking, with a cost to the P.F.D. fund of about $800. For three days we have not seen the sun; every man and boy and several women have been fighting fire, and the rest of the women and children have been doing the chores and cooking for fire fighters. Splendid work has been done without complaint. Two large trucks brought fifty men from Fresno to help, and the local jitneys have been going day and night. The stores have been bought out of many things and individuals have emptied their store closets. To cap the climax, the Great Panjandrum District Fiscal Agent himself has come down from San Francisco with his money-bags to pay off men.

Now there is no denying that Idaho and Montana, even the Shasta and Angeles Forests have had bigger, more costly fires, but as for Sierra, this has been the "damndest biggest fire that ever burned."

The lessons ? Everybody is telling everybody else what they are. The district ranger vows he will not give permission to burn again till snow flies; the stockmen swear the settlers did it; the settlers insist that the stockmen shall be followed by volunteer detectives.

Of course, except where lucky settlers have bands of goats or can afford to complete the clearing begun by fire, and plow, the brush will come up thicker than ever, for the accumulated seeds are now heated to the sprouting point. All the young oaks trying to force their way through the brush, eventually to shade it out, are killed, and many a fine old oak is seriously damaged. Of course, too, this shallow mountain soil that has been long accumulating a little humus is all burned out, and the now unprotected steeper slopes will wash down to the granite. But no lives were lost nor homes burned -- and it was a glorious fire.

HEADQUARTERS NEWS

This Forest was visited by the following Service men during the last quarter:

Charles H. Squires of Washington, in charge of claims and occupancy.
Robert V.R.Reynolds, of Washington, in charge of entry surveys
Paul G.Redington, District Forester, District 5.

The Supervisor spent ten days with the State Engineer and the Mather party, going over the route of the Muir trail from the north fork of Mono Creek to Simpson Meadow. Part of the trip from Evolution Lake to Palisade Creek was made on foot.

The Deputy Supervisor was in the field six weeks on range inspection and the preparation of the Improvement plan. He visited the Pine Ridge and Kings River districts.

Considerable activity in timber sales has necessitated field work by Mr.Birch and the Supervisor during October. Mr. Herman Peterson has applied for fifteen million feet along the San Joaquin & Eastern Railroad near Dawn; the Big Creek Tray and Shake Mill has also applied for a new sale adjoining their present cutting; E.M.Prescott of Fresno, now owner of the old Porterson lands, has applied for about 50 acres of tray timber near his holdings, and Frank Hauert has applied for a million feet near Bald Mountain.

Forest Examiner Birch has been in charge of the Madera Sugar Pine Sale until October 1, when they shut down for two weeks on account of the storm. Ranger Werly assisted Birch in the scaling on this sale.

The Supervisor inspected all Class C and D sales during the quarter.

The Supervisor was called to Fresno and Madera early in September to help the respective County Boards of Supervisors prepare applications for appropriations under the Federal Aid Road Act.

The Chowchilla Ranger Station has been turned over temporarily to the Home Builders Club of Mariposa County for a club

house and general public meeting place.

Mr.C.J.Blanchard and Mr.H.T.Cowling of Washington spent a few days in August taking moving pictures of Special Use activities around Cascada and Huntington Lake.

After the first storm in October, all of the force were busily engaged in burning brush on all timber sales, free use areas and improvements. At this time it looks as if we would present almost a clean slate in this activity.

The cover illustration shows Ranger Barker anxiously watching a brush pile on the Ockenden-Byxbee sale, to see if his torch flame has started a real fire in the damp trash.

Ten thousand travelers' maps of the Sierra were received from Washington during September and October. These maps are eagerly received by Forest users.

DISTRICT NEWS

Mariposa District

The last fire guard went off duty in the Mariposa District September 30, when a welcome shower put out the fire in Devil's Gulch. Fireman Ferguson said it was worth a half month's salary to know he did not have to fight fire there again this season.

From September 30 to November 1 we have had 8.33 inches of rain at Mariposa Station. Several inches of snow fell at Signal Peak and the stockmen have been quite busy gathering their cattle in the upper ranges.

The weather has been very moderate and feed is well started. Stock goes out of the Forest in fine condition this year, and if we have another rain soon the feed in the foothills will be far enough advanced to carry the stock well into the winter.

The annual Fair at Jerseydale was held September 8,9 and 10 and was of much interest. The Forest Service had a rest room there, with a collection of fire tools, maps, signs, an exhibit of timber-destroying insects and two large albums of photographs showing various Forest activities and views of our finest

forest and mountain scenery. We also ran in a temporary 'phone line for the benefit of the public.

The Mountain units of the Madera County Farm Bureau held a Fair at Ahwahnee on October 6,7. The weather was not favorable for a large attendance, but the exhibits of fruits, vegetables grains, etc., were many and fine. The Service exhibit was displayed here also, and in addition souvenir specimens of Big Tree wood about the size of a post card were given out. These were made from redwood taken from a fallen monarch in the Fresno (Nelder) Grove, within the Sierra . Forest Supervisor Benedict District Forester Redington , Deputy Supervisor Jordan and Robert Kloppenburg, Mr.Benedict's brother-in-law, came over from Northfork October 8. Their presence at the mountain Fair was appreciated, and it was certainly nice to have Mr.Redington with us again.

We have been quite busy the last two weeks trying to clean up the free-use slash and the timber sale brush. Conditions were favorable for this work until the last few days when it burned too well and work was stopped.

The Fred N.Clark sale has suspended operation for the winter.

Ranger Werly, who was scaling on the Sugar Pine Sale, has been on sick leave with blood-poisoning in one foot. He is improving however and able to discard the crutches.

Ranger McLeod will be the one lone ranger in the Mariposa District this winter.

Sugar Pine District

A new trail down Northfork Mountain on which work was begun August 25, was completed September 22, there being a fraction over a mile of new trail built. While the trail is not all on a 10% grade, it is a big improvement over the old trail.

An experiment is being tried out in this District this year with pasture fences in the higher altitude. Posts have been solidly planted eight feet apart, and stays put in between the posts. We hope such a fence will withstand the weight of winter snows, and we will avoid the necessity of taking down and putting up our back-country pasture fences every year.

The heavy snow which fell on the first of October caused a loss to many stockmen. Many cattle perished in the storm, while those that were caught and won through looked worse than when they went in in the spring.

There was a notable increase in the number of tourists and campers in the mountains of this District the past summer and a great appreciation was shown by the traveling public for the Service maps and other literature, as the public register kept at Clover Ranger Station will attest. There were 200 names on the register as against 30 last season.

Northfork District

Thanks to the Rain-Maker! On September 22 a light shower lessened the fire danger considerably, though we had several lightning fires following this storm. But on October 1 the real fire season closer came, gladdening the force of the Northfork District. We had experienced the worst fires during September that had occurred since the birth of the district, and we don't yet feel inclined to talk about fire records. We did our best -- and came out with the worst record ever!

I think one theory is proven by the big September fires, and that is the light-burning theory for brush-covered areas with little or no pine timber, and for the edge of the timber belt adjoining the brush areas.

This fall, since the big rain, has been an exceptionally good time to burn timber sale slash, and we have taken advantage of it to the fullest extent, completing the last burning the first week in November. This is the most thorough clean-up we have made for eight or nine years.

Timber sales in this district are all completed for the season.

There is a rumor to the effect that the White and Friant Lumber Company will begin operations in the near future, cutting their vast holdings in this district. This will probably mean either a railroad from Friant or a spur from the San Joaquin & Eastern Railroad by way of an incline from Hooker's Cove.

The repair work on the San Joaquin River bridge and the Logan Chiquito Bridge has been completed by the ranger force since the last publication of the RANGER.

The condition of the grazing ranges was below the average at the close of the summer season, thanks to the lack of late sp spring and summer rains. About 50% of the stockmen on the district did not sell any beef at all, but there is good prospect for green grass on the winter ranges.

The Government team and wagon have been condemned and sold at auction, Ranger Mainwaring buying them. We were sorry to see Dick and Dolly go. They made a good strong willing team. But we are glad Ranger Mainwaring got them.

Pine Ridge District

The fire season ended with a plunk on October 1 when a heavy fall of snow in the high country and a general rain over the fire hazard belt relieved us of all fire danger. The number of fires in this district during the past summer was a little larger than usual, but a large percentage of them was in Class A.

There is every prospect of a sale of timber to Mr.Herman Peterson, former owner of the Peterson Mill on Pine Ridge. Mr.Peterson will probably operate along the San Joaquin & Eastern railroad, above Dawn.

A sale of 500,000 ft. B.M. has just been made to the Pacific Light & Power Corporation. This timber will be used in the construction work now in progress at the Lake and will be sawed by the Company's mill.

The Pacific Light and Power Corporation is working about 500 men at Huntington Lake. The three big dams are to be raised fifty feet, thereby greatly increasing the storage capacity of the Lake.

On September 29 Deputy Supervisor Jordan and Ranger Price left Shaver for Lower Hot Springs and Blaney Meadow. Camp was made at Blaney on the evening of October 1 and upon awakening the next morning they found everything white with snow, eighteen inches having fallen during the night and more coming.

Leaving camp after lunch we plowed our way up to the French Canyon bridge and removed the flooring for the winter. The snow was three feet deep at the bridge.

There being no feed for the stock, we left Blaney the following morning and rode to Mono. Even here there was almost a foot of snow, hence no horsefeed. As it was still stormy the next morning, we broke camp and started for lower altitudes.

Only a few of the cattlemen had driven their stock to the winter ranges prior to the storm, and much difficulty was encountered in gathering and driving over the summit. Between three and four feet of snow fell on the main trail over Kaiser, making the work very disagreeable.

Kings River District.

State Engineer McClure visited the Muir Trail job on the Middle Fork about the 20th of August. He and Supervisor Benedict walked via Muir Pass from Evolution Lake to Simpson Meadow while Mr.Tully accompanied the Mather party of Park officials, railroad men, etc., via Hell-for-sure Pass and Crown Valley to Simpson Meadow.

Mr.McClure was well pleased with the country through which the trail is being built, but desires a higher standard of trail. In no case should the maximum grade exceed 15 %, no grade should be lost that can possibly be helped, and a wider tread should be maintained.

Deputy Supervisor and Mrs.Jordan visited the Kings River District and with District Ranger Bocthe covered the district pretty thoroughly, including all the cattle ranges, the Middle Fork canyon and the Muir Trail. A hiking trip was taken to the head of Palisade Creek, looking over the proposed route of the trail which will ultimately go up this way and down a branch of the South Fork of Kings. We made it to Doc.Hogue's camp about 8:30 P.M., where he and Ranger Gloss Crow were in camp with a sheep man from the Inyo who had brought over a bunch of sheep to finish out the season. Their camp looked better to us than the soft side of any of those granite boulders, and we spent the night very comfortably. Both Mr.and Mrs. Jordan enjoyed the experience of getting their first golden trout, besides some real scenery.

An electrical storm on August 28 started a number of fires

in the Kings River District. With the exception of one that started on the south end of Patterson Mountain, well down in the Northfork Canyon, none of them did any damage. The Patterson Mountain fire, however, broke the record in this district for area burned and for cost of suppression. The fact that it started in a section not covered by our lookouts, the character of the country and the long distance from men and supplies are held by us to be responsible.

The Muir Trail Crew came out just in time to escape a soaking on the tail end of the job. Part of the crew, including the cook and his wife who were traveling slowly with burros for pack stock, lay over near Crown Valley for the rain to let up and were caught in about three feet of snow. They had to wait a week more for the snow to settle so that the burros could travel.

The past season was an unusually successful one from the campers' standpoint. A large number of people came as far as Dinkey in machines, and some of them were carried on beyond by Robinson's pack train. Many succeeded in bagging the limit of deer, more than twice the usual number of antlers being seen on their way out by the rangers.

Rodgers and Fink, old-time stock raisers in this District have sold out to the Johnson Brothers. It was reported that J.W.Rice had sold out ranch and cattle, but the report has not been verified to date.

District headquarters moved down from Dinkey on October 4, about two weeks earlier than our usual time for migrating. There was a foot on snow on the ground at Dinkey that morning but since then it has all melted off in the good weather that followed.

District Ranger Boothe went to the Pine Ridge District October 19 to help Rangers Price and Barker run out some lots in the special use areas.

Personal Items

Ranger Taylor is a grandfather. "Now what do you know about that!" Time was when a ranger meeting looked like a gathering of high-school alumni except that the rangers were immensely more serious than school boys. The current criticism of the force was because of its youth, and one manager of a lumber company is said to have said to one of the older inspectors: "Thank the Lord for a man at last; I'm tired of dealing with boys." This first Sierra grandchild is named Barbara Hoskins and saw the light of day October 5, 1916.

The Sight Rock Station also boasts a new baby, Alethea Maurine Clark, born September 2, 1916; and Marian Evelyn Boothe whose mother is a telephone operator at the Oakhurst Service switchboard and whose father, Creston Boothe, devotes every summer to keeping fires from starting in the Miami region, arrived on August 30, 1916.

So the foothills of the Sierra have three more children growing up who will know "Why is a National Forest".

The Supervisor, Deputy and Chief Clerk of the Sierra, together with Mr.Shinn and Mrs. Jordan went to Fresno on the night of October 27 to hear Gifford Pinchot speak. All five of them were in the Service while Mr.Pinchot was Forester, and welcomed this opportunity to see their former chief. After the political meeting - which seemed to the impatient five merely incidental - there was an hour of "good old talk" over old times and new times in the Service, and all walked to the train with Mr.Pinchot and his Secretary. Queer how silent the walk back to the hotel was.

Clerk Leslie is about to leave the Sierra. "If ye have tears -- " Only we are all mighty glad that Mr.Leslie has a chance at a much increased salary to return to the work for which he was especially trained. He will be engaged on road engineering in District 3, where Mr.Redington, formerly Supervisor of the Sierra, is now District Forester.

Mr.Redington, called to San Francisco from Albuquerque, on official business, took a few days off, en route, to visit his old Forest. Needless to say, Northfork was more than glad to see him again, and only grieved that there were so few possible meals in seven days to which they could invite him. He took in the Ahwahnee Fair on October 8, with Supervisor Benedict and

Deputy Supervisor Jordan, the three gentlemen being appointed judges of exhibits. To be sure the mere fact that they knew firs from pines did not give them the seeing eye that distinguishes onions from leeks or cabbages from kale, but their judgments were accepted, nevertheless.

Inasmuch as Mr.Birch seems doomed to spend the greater number of his days away from home, rather than leave his womenkind at Boothe Station, three quarters of a mile from the nearest neigh bor, he moved them to the Franklin cottage at Northfork for the winter.

All the summer camps have been deserted except the Cascada Station which will for the first time be occupied all winter. So much special use work will be going on this year and the Power Company will be employing so many men there, needing privileges, small timber sales, etc., that it seems wise to keep Mr.Barker at his post all winter.

Ranger Verly has been most unfortunate this summer, having to work under trying conditions of ill health. He will probably have to have a disability furlough for the winter during which time his doctor expects to make him entirely over. It is suggested that Verly learn to take care of himself, even though he does but one man's work in a day when he returns in the spring.

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